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From Hollywood to Main Street, it's being heralded as the beginning of a home entertainment revolution. It's called DVD Video. With a digital picture that's better than laser disc, and state-of-the-art digital audio, DVD is destined to change your home into a, well, you get the picture. Now movies meet the digital age. And Philips Magnavox is there to help make the introductions.



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Musical Fidelity D/A Converter and Proceed CD Player

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Dorian Records, page 40



Now You Can Stop Kicking Yourself For Selling The Originals.



No audio equipment in history has achieved the legendary status of the Marantz vacuum-tube electronics. So timeless are the sonic and aesthetic attributes of this classic trio that, almost four decades after their introduction, pristine examples are still eagerly sought by committed music lovers and audiophiles alike.

Fortunately for those remorseful souls who parted company with their beloved originals, Marantz proudly announces the reintroduction of the Marantz Classics. The Model 7 preamplifier, Model 8B stereo and Model 9 monaural power amplifiers sound as remarkable today as when they first defined the state of the art during the Golden Age of Stereo.

These recreations are true to the originals in every way. In many instances, parts like transformers and meters have been sourced from the very suppliers who furnished them over a generation ago. Faceplates, knobs and switches are identical, and even the Marantz logo has been restored for absolute accuracy. All wiring is point to point; no circuit boards have been substituted for the sake of convenience or cost. Only genuine safety improvements, like detachable IEC power cords, standard fuses, and contemporary speaker terminals in place of archaic output taps, differentiate these modern units from their predecessors.

Ultimately, these jewel-like components could have you listening to music from a whole new perspective, while providing the kind of satisfaction that comes from possessing a timeless classic.

So instead of kicking yourself, you can sit back and enjoy the company of a long-lost friend.



marantz

Forgive me if you've seen the same comment made previously in a bunch of other places, but I've been struck recently by what a Janus-faced thing is the world of online communication. The growth of computer-based communications services, such as CompuServe, America Online, and, most recently and prominently, the Internet, has brought with it unprecedented opportunities for convenient, direct exchanges of ideas and information between far-flung individuals. Often it brings together people who would not otherwise ever have encountered one another. I've been hanging out online in one cyberplace or another for years, so obviously I find it worthwhile. I've met a bunch of interesting people and learned a lot in the process.

There is a flip side, unfortunately, which is that the vast quantity of information floating around in cyberspace is largely unfiltered. Mixed in with all the facts and sound reasoning you'll also find chunks (sometimes quite big chunks) of noninformation, misinformation, and even disinformation. It is all too easy for people to disguise their identities online. How do you know when what you're reading on the Web is accurate, or at least sincere, and when it is false, highly biased, or deceptive? Hard to tell sometimes. And as with ordinary gossip, unfounded rumors have a way of transforming into "the real inside dope" by the fourth or fifth repetition (which can come very quickly on the Internet).

These observations are prompted by recent online discussions of DVD. I guess predictably, DVD was kicking up a storm of cybercontroversy long before it was actually available. Having seen early implementations in action, I found myself arguing with people who hadn't but who were nonetheless convinced that it must be seriously compromised by its reliance on audio and, especially, video compression. Eventually this line of thinking ossified into a claim that I still see repeated occasionally, with great confidence, that DVD quality isn't yet up to that

of laserdisc. Now that people can actually buy DVDs and players for them, I see more and more messages wondering what the naysayers are grouching about, given that the sound is great and the picture on the screen looks terrific. But why the presumption of inferiority by so many to begin with?

The answer to that question may be connected to another. Based on what I've been reading and hearing lately, I've started to wonder if audiophiles are collectively turning into grumpy old men. When I first got interested in audio, about 25 years ago, almost everyone I met who shared that interest was very keen on new developments and decidedly gung-ho on progress. Maybe all those guys went over to computers. Now I run into more and more audiophiles who seem miffed at the prospect of any fundamentally improved approach to sound reproduction—better to spend the rest of our days spit-shining current technology (or even technology resurrected from the bone yards of hi-fi history). It's not a promising trend, if it's real.

Counter to stereotype, by the way, audiophiles who might legitimately be referred to as old men seem less afflicted than those of my own middle-aged baby-boom generation. I don't know why that should be, unless it relates to an excess of cynicism among the younger folk. Or maybe grumpiness eventually induces one simply to abandon the hobby rather than continue suffering annoyance, leaving only those with sunnier dispositions. On the other hand, a certain amount of grumpiness may be a natural reaction to periods of intense change, in which case there's probably no cause for alarm. Except that if you're already among the grumpy, you should be forewarned that events will continue to aggravate the condition for a few years to come, at minimum.



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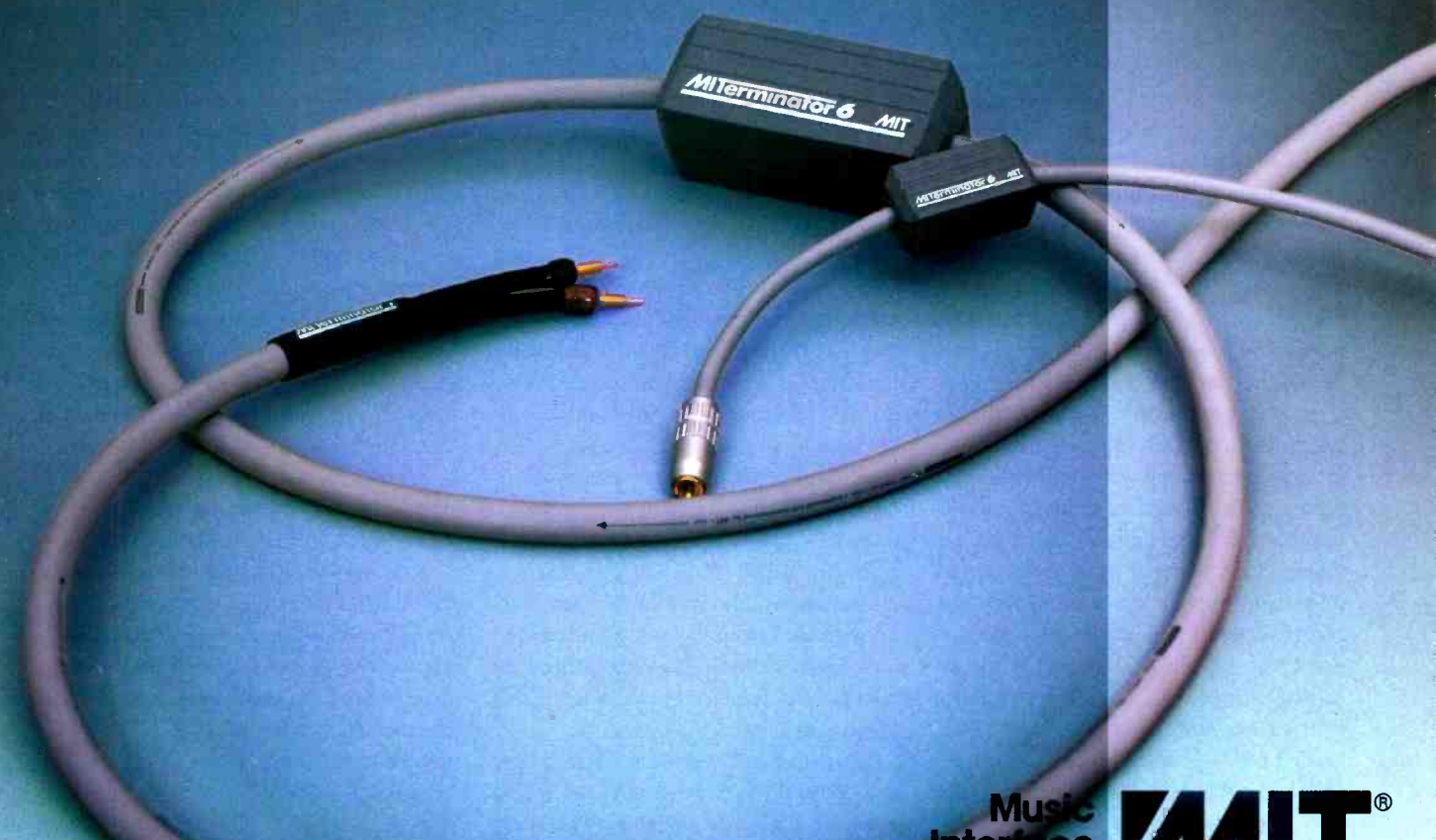
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Like many Home Theater enthusiasts, you may be losing picture and sound quality by using ordinary audio and video cables, such as the ones that came "in the box." Ordinary cables (even "high-end" types) can alter critical audio and video signal timings and phase relationships, resulting in loss of picture detail and unnatural sound. That's why you need MIT's high-performance interconnects and speaker cables in your Home Theater system.

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Platter Matter

Dear Editor:

It's amazing how seemingly ignorant your staff is of the recent resurgence of LPs, as evidenced by the availability of quality vinyl records of current rock and pop albums as well as a plethora of classical, blues, jazz, and popular reissues.

Alan Lofft, in the December 1996 "Play-Back," foists this contrived ignorance on your readership through misleading and deceptive statements regarding the application of the Shure V15VxMR phono cartridge, ostensibly for LP historians and archivists with "...hundreds (or thousands) of LPs tucked away that you never seem to play anymore. . ." Lofft wistfully harkens back to the supposed "heyday" of vinyl from whence all these Smithsonian artifacts originated.

The reader is left reinforced with the false notion that LP production is indeed "history" and that LP playback is an anachronism. While my own LP collection is burgeoning with fantastic-quality new vinyl, almost no one I know is aware that LPs are currently being manufactured. In fact, those who acknowledge LP collections only reluctantly admit—and then in embarrassed, hushed tones—that they still listen to and enjoy these disreputable vinyl antiquities.

If ever there were a heyday of vinyl, it is now. I have fewer than 100 LPs from the putative "heyday" of vinyl to which Lofft refers, as most domestic vinyl from the late '60s through the early '80s was unlistenable straight out of the shrink-wrap. There have been a good 20 years of technological improvements in the recording and manufacturing chain of vinyl from those bad ol' days—and likewise on the playback end. Most people have never heard a properly produced LP played back on a quality turntable fitted with a modern cartridge. I hadn't either until a year ago, when I upgraded my '70s vintage plastic turntable with a new Thorens and began purchasing new vinyl: It was simply a revelation! Now my CD player is gathering dust!

On another point, I know it must have been irksome for you guys to hear Kavi Alexander tout analog ("The Audio Interview," December 1996), but I'm going to let you in on a "secret": The newly remastered Muddy Waters *Folk Singer* album, to which Alexander so enthusiastically refers, is *not* the CD. In fact, it is a current vinyl production from Mobile Fidelity Sound Labs (MFSL 1-201)! Of course, the reference that was provided to your readers in the article, Chess CH-9261, masks this fact, giving them no information by which they can avail themselves of the LP to which Alexander referred.

I can imagine how irritating it must be for *Audio* to witness the resumption of LP production. However, your contrived ignorance does provide a useful strategy: It keeps your readers conveniently in the dark regarding LP availability, serving to ensure that the current LP revival quickly becomes a mere footnote in music history. You would better serve your readers by keeping your biases *personal* and attempting instead to provide a balanced, *professional* approach to record availability, as does your less Philistine competition.

Michael T. Klewin
Lawrenceville, N.J.

Editor's Reply: There was no attempt to mask information from *Audio* readers; in fact, just the opposite. Did the analog snit into which you worked yourself on reading the Kavi Alexander interview in the December issue blind you to the full text of the article? In response to a remark from the interviewer, Bruce Bartlett, that some old recordings still sound great, Kavi Alexander replied (page 37): "Yes! There's a newly remastered Muddy Waters LP [emphasis mine] recording from 1963, *Muddy Waters, Folk Singer* [Chess CH-9261], that's absolutely formidable in its sound quality. Staggering."

Journalism 101 did teach me to be precise, to get the facts straight. If you consult *Schwann Spectrum* (Winter 1996-1997), you'll discover that Chess CH-9261 is the

Muddy Waters LP, remastered and first reissued in October 1987, not a CD. It has since been reissued again by Acoustic Sounds in both LP (AMCA 9261) and CD versions (CMCA 5907), available by mail-order (800/716-3553) for \$10 and \$15, respectively. Mr. Alexander owns the Chess LP from Acoustic Sounds, not the Mobile Fidelity Anadisq 200 vinyl (MFSL-1-201) or the Mobile Fidelity Ultradisc CD (UDCD-01-00593), the latter also available from Acoustic Sounds (CMOB 593 Gold).

As regards improvements in record manufacturing, respected mastering engineers such as Doug Sax (Sheffield Lab) and Stan Ricker (of the JVC Cutting Center) were producing excellent-sounding direct-to-disc and half-speed mastered LPs long before the advent of the CD format. When everything is aligned and tweaked just-so—tonearm, turntable, and cartridge—and cleaned, some LPs can sound remarkably good, barely distinguishable from the same material on CD save for the odd groove tick or trace of telltale flutter. There are also thousands of crummy-sounding LPs and CDs (about half of the 17 cartons of vinyl that came with me to Manhattan fit that description). The pleasure of audio as a pastime is searching out great recordings.

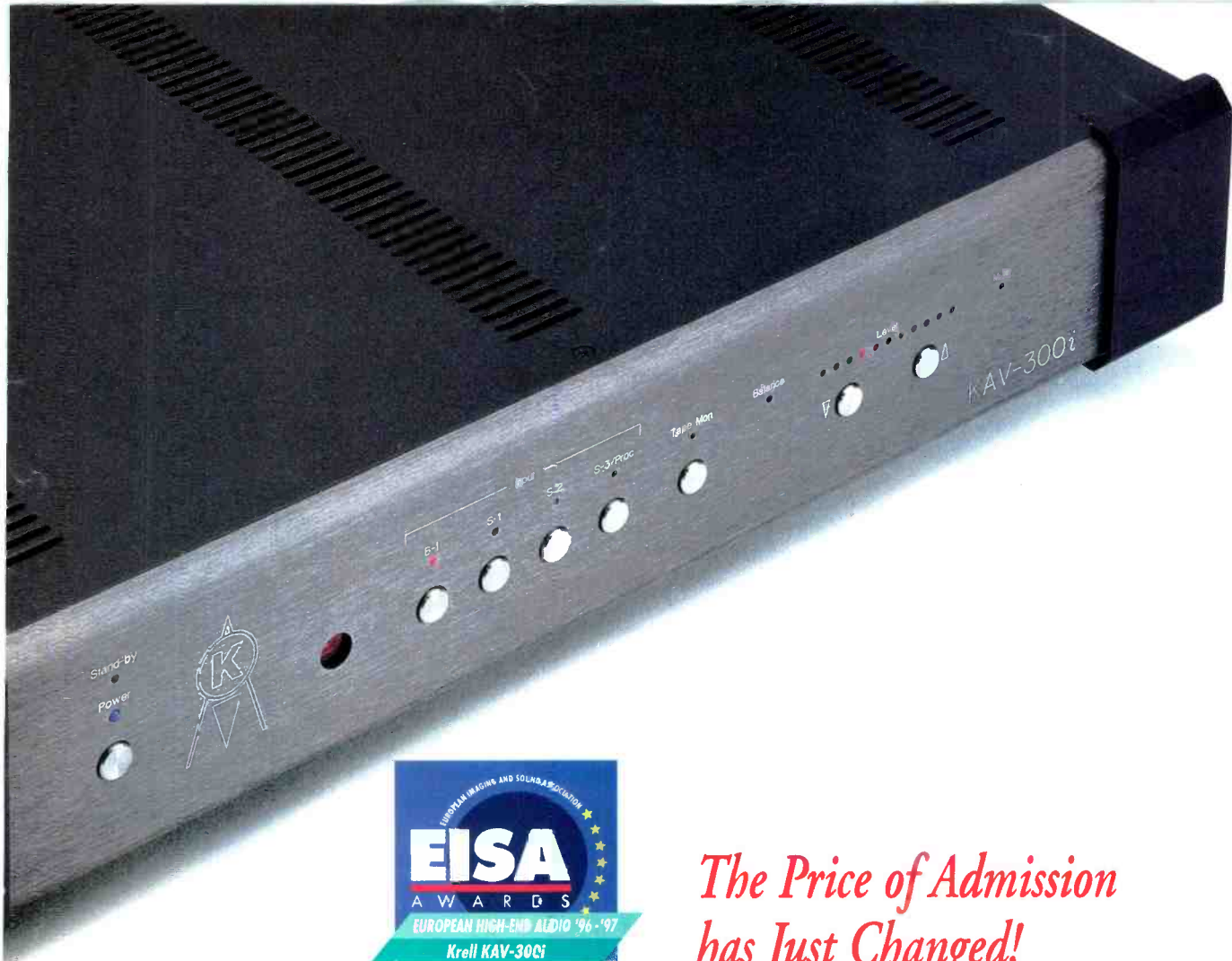
The "PlayBack" review cited the Shure V15VxMR cartridge as the best transducer I had tested for reproducing the best and worst of vinyl recordings. Of course good vinyl is still being manufactured (you might check out our interview with Mobile Fidelity's Herb Belkin, January 1996), but the quantities are minuscule relative to the millions of CDs sold annually. In fact, recent data from the Recording Industry Association of America shows that 2.9 million LPs were shipped to retailers in 1996 versus 778.9 million CDs.—A.L.

Was That One Joke or Two?

Dear Editor:

Your April issue seems to have a couple of "foolish" articles. The obvious one concerns Professor Lirpa's superconducting cable in Ivan Berger's "Spectrum." And in light of previous audio passing fads (four-channel, Elcaset, MiniDisc, etc.), I'm forced to consider DVD a joke until it proves to be otherwise.

Glenn Manuel
Richardson, Tex.



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WHAT'S NEW



NHT CENTER-CHANNEL SPEAKER

Matching the sonic character of the center channel to the left and right front

speakers is vital to creating a seamless soundstage for home theater. NHT says its AudioCenter-1, a compact, two-way acoustic-suspension system, complements the midrange voicing of its Models 1.5, 2.5i, and 3.3 main speakers. The AudioCenter-1 uses the same aluminum-dome tweeter contained in those models with two 5¼-inch polypropylene woofers. Frequency response is said to be 75 Hz to 21 kHz, ±3 dB, with sensitivity rated at 87 dB. Price: \$450. For literature, circle No. 100

Parasound Outdoor Speaker

A molded ABS plastic enclosure, rugged weather-resistant drivers, and stainless-steel speaker grilles enable the Nomad Ten to provide hi-fi sound in a humid beach house, at poolside, or even in a frigid mountain cabin, says Parasound. The 6½-inch long-throw woofer uses a carbon-fiber-reinforced polypropylene cone that is resistant to ultraviolet light, and the 1-inch soft-dome tweeter has a Supronyl diaphragm. Response is pegged at 48 Hz to 20 kHz, ±3 dB.



A subtle 2-dB bass boost is built in to compensate for the lack of reinforcing surfaces outdoors. Price: \$499 per pair. For literature, circle No. 101

Mirage Speaker

Using an unusual driver layout, the OM-6 is said to yield a true, spherical Omnipolar sound field. Dual 1-inch titanium hybrid tweeters and two 5½-inch polypropylene midrange drivers on opposing surfaces of the OM-6's upper baffle are coupled to a lower subwoofer module. The latter has twin 8-inch long-throw woofers powered by a built-in 150-watt MOS-FET amp. Usable bass is said to extend to 18 Hz. The OM-6 measures 45½ x 9¾ x 16½ inches and weighs 61½ pounds. Price: \$3,000 per pair in high-gloss black lacquer. For literature, circle No. 103



ENERGY HOME THEATER SPEAKERS

To achieve a smooth timbral match, the Take 2 main satellites and surround speakers and the Take 1 center speaker use identical ¾-inch aluminum

Hyperdome tweeters and 3½-inch long-throw woofers with carbon-graphite cones (the Take 1 has two woofers). All are magnetically shielded and, when combined, make up Energy's Take 5 system. The satellites measure just 4 x 6¾ x 5¾ inches and are easily wall-mounted with accessory Mega Mount swivel brackets. An optional subwoofer is recommended. Price: \$500 in gloss black or Euro-white finish. For literature, circle No. 102



B&W SPEAKER

The Signature 30, a three-driver floor-standing system, has many of the rarefied design elements of B&W's 1991 Silver Signature compact monitor, including silver wiring throughout (even the metal-dome tweeter and midrange driver voice coils are wound with silver). The 40-inch-tall enclosure uses Matrix-cell construction and has one 7-inch aluminum-cone woofer and one Kevlar-cone 7-inch bass/midrange driver. Frequency response at the extremes is said to extend below 30 Hz and as high as 26 kHz. The speaker is available in hand-rubbed Gray Tiger's Eye or Red Bird's Eye gloss finishes. Price: \$12,000 per pair. For literature, circle No. 104



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WHAT'S NEW



Mesa Engineering Integrated Amp

Adjustable negative feedback (via a four-position switch) is one of the unusual design features of the Tigris

tube integrated amplifier. There are three pentode/triode modes of operation, selectable by a front-panel toggle switch, and switchable tube or solid-state rectification. The self-biasing Class-A amp's output is rated at 35 watts per channel in all-pentode mode, which reduces to 28 and 20 watts per channel, respectively, in $2/3$ -

and $1/3$ -pentode operation. A variable buffered preamp output enables biamping or feeding a powered sub. Price: \$2,195. For literature, circle No. 105

Systems Development Group Diffusers

The SDG Art Diffusers are intricately sculpted diffusion panels designed for ceiling or wall mounting. The panels are available in wood (Model W) or in high-density foam plastic (Model E). Each measures 15 inches square x 9 inches deep. The lightweight Model E panels (shown) can be hot-glued in

place and have a painted finish. The Model W panels require structural attachment and are available in a wide choice of standard or exotic woods. Prices (excluding installation): Model E, \$55 per panel; Model W, from \$130 per panel, depending on choice of wood. For literature, circle No. 106



Esoteric Audio Interconnects

By using double outer shielding, spiral-wrapped copper/Mylar foil, and copper braid, the Technus Twin Symmetry interconnects are said to provide 100% protection from external noise. Three different insulating materials, which Esoteric Audio calls Tri-Barrier Geometry dielectric, separate the

twisted-pair copper conductors from the outer shielding and are also claimed to damp internal resonances. The interconnects come with TechLink RCA or Neutrik XLR connectors. Price: \$165 per 1-meter pair. For literature, circle No. 107

MIT AC CONDITIONER

Intended for custom installations, the Z-Controller is a rack-mountable AC-distribution component and power conditioner. MIT says it improves the sound and image characteristics of audio and home theater systems by absorbing all noise, RF, and audio-frequency disturbances from the AC line. In addition to surge and spike protection, the Z-Controller provides sequential power-up/power-down and remote-trigger initiation for all connected components. Price: \$2,495.

For literature, circle No. 108



When you need to split a high-quality signal from a single output, you needn't use a cheesy connector from the local parts store. The high-performance Y adaptor, IHP Y, is said to split complex music signals with the least possible signal loss by using dual, multiple-gauge Bandwidth Balanced bass and high-frequency wire networks. The adaptor comes with Monster's

Monster Cable Y Adaptor



Turbine gold-plated RCA connectors and is available in two models, female to two male or male to two female. Price: \$14.95. For literature, circle No. 109

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Music Blending with DJ Mixers

Q *I am assembling a portable DJ-style sound system to play dance music. Is there a mixer that can help blend tracks without clashing the beats? I need a constant beat as songs change so that the dancers can maintain their rhythm. Also, are there CD players available whose speed can be adjusted the way a phonograph turntable's speed can be? And are there dual-transport CD players similar to dual-well cassette decks?—John McKinson, Queens Village, N.Y.*

A The mixer has nothing to do with whether beats can blend properly as one song ends and the next one starts; all the mixer does is let you fade between songs or overlap them. The DJ-style mixers I've seen have at least one cross-fader to blend songs from separate program sources. Producing a smooth transition between tracks depends mainly on your skill and the music you select, not on your equipment. Even when you have a variable-speed player, you need skill to cue your music so that the two machines are playing "in beat" before you fade from one player to the next.

I don't know what CD players have the features you need, though I believe they do exist. To find them and the mixers you require, try musical-instrument or DJ-equipment dealers, not hi-fi stores.

Who Needs D/A Converters?

Q *What is a digital-to-analog converter used for? When is it necessary to use one in a system?—Derek S. Collins, New Port Richey, Fla.*

A In recording, analog signals from microphones or other sources are converted to digital pulses. These digital audio signals need to be converted back to analog form before we can run them through pre-amps, amps, and, finally, speakers or headphones in order to hear them. Components that play CDs, DATs, MiniDiscs, or DCC tapes, therefore, normally have built-in digital-to-analog (D/A) converters. Many of these components also have digital outputs for connecting external D/A converters in the pursuit of higher sound quality. Since

many audiophiles use external converters, high-end CD players are often available as transports without internal D/A sections.

When 8 + 8 = 8— and When It Doesn't

Q *If I connect an 8-ohm loudspeaker to each channel of my stereo amp, is that amp loaded by 16 ohms?—Sal Puzzanghera, Medford, Mass.*

A Each of your amp's channels is effectively a second amplifier, so connecting a speaker to one channel has no effect on the other channel's load.

If you were to connect two 8-ohm loudspeakers to *one* channel, then the load "seen" by the amplifier would no longer be 8 ohms. If you wired the speakers in parallel (both wires of each speaker connected to the amp), their combined impedance would be 4 ohms. If you wired them in series (one wire of each speaker going to the amp and the remaining wire connecting the speakers to each other), the combined impedance would be 16 ohms.

Lowering Speaker Impedance

Q *Can I improve my system's sound if I lower my speakers' impedance from 8 to 4 ohms? And if it would help, how can I do it?—Dwayne Pellegrin, Houma, La.*

A Some amplifiers deliver more power into 4-ohm than 8-ohm speakers; however, changing your speakers' impedance might well lower their sensitivity, wiping out some or all of that power gain. There would be no other advantages. What's more, altering your drivers and crossovers for 4-ohm use is wildly impractical. I don't recommend it.

Using Two Speakers As a Center Channel

Q *My home theater system's center-channel amp requires an 8-ohm loudspeaker. I do not have one, but I do have two 4-ohm speakers. Is it safe and appropriate to connect them in series to produce the 8 ohms that my amplifier calls for?—Peter Nguyen, San Jose, Cal.*

A Assuming that you have two identical 4-ohm speakers that are magnetically shielded, you have nothing to lose by trying. (Placing an unshielded speaker near a TV screen will likely distort and discolor the picture, and some of these effects may persist even after you take the speakers away.) I think that the overall effect will be best if you stack the two speakers, one above the other. This will give you broad horizontal coverage while slightly narrowing the vertical coverage, both of which are desirable in a center channel. Be careful to wire the speakers so that they are in phase with one another and with the main speakers; otherwise, you'll lose bass and have imaging problems.

If the two speakers are not identical, wiring them in series may cause their impedance curves to interact adversely, producing audible aberrations in frequency response. Moreover, odds are that your 4-ohm speakers were not designed to match the sound of your main speakers. Together, these factors may make sounds change character as they move across the sound field; depending on the degree, it can be quite distracting. And I hope your home theater system lets you adjust the center channel's relative level, as your two-speaker array is unlikely to match your other speakers' sensitivity.

Replacing Old Filter Capacitors

Q *My old Philco radio from the 1930s picks up stations quite well, but it has a loud, almost unbearable, hum that comes on slowly as the radio warms up. The volume-control setting makes little difference to the hum level, though by setting the volume rather high I can improve signal-to-noise ratio enough to make listening tolerable. Is this the nature of the beast?—David M. Hudson, Dallas, Tex.*

A The hum you hear is not the nature of the beast but is probably caused by aging electrolytic filter capacitors. You'll find these capacitors in your radio's power-

If you have a problem or question about audio, write to Mr. Joseph Giovanelli at AUDIO Magazine, 1633 Broadway, New York, N.Y. 10019, or via e-mail at JOEGIO@delphi.com. All letters are answered. In the event that your letter is chosen by Mr. Giovanelli to appear in Audioclinic, please indicate if your name or address should be withheld. Please enclose a stamped, self-addressed envelope.



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The performance of integrated amplifiers is compromised for all-in-one convenience. Integrated amplifiers are not equipped with the heavy-duty, high current, high voltage power supplies available in the best separate power and preamplifiers. First of all, there just isn't enough space. More importantly, there are technical limitations. In an integrated amplifier, such supplies would generate unacceptable levels of heat and hum. And the high signal levels found in the power output stages create a source of noise, crosstalk, and preamplifier instability. Obviously, heat and noise-generating elements shouldn't be operating in close proximity to the preamplifier circuits. However, this is exactly where such elements, scaled down-to be sure, are found in integrated amplifiers.

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supply section, which will likely include a power transformer and should include a rectifier tube, such as a type 80. The filter capacitor will be a can mounted on the chassis, probably a two-section unit. It might be a dual 8-microfarad capacitor rated at 450 volts DC.

You'll need to replace that capacitor. Any replacements must have the same value (you'll find that microfarad, then abbreviated "mfd," is now abbreviated as "μF") and an equal or higher voltage rating. I doubt you'll find a capacitor that can physically mount to the chassis as the present unit does. However, because capacitors are smaller today, you may be able to find two tubular caps that you can easily place under the chassis. To install the replacement capacitors, detach the wires from the old can but leave it in place to maintain the radio's original appearance.

Most old electrolytic cans were polarized, using the can as the negative terminal. Usually the can was grounded to the chassis, but in many cases it was insulated from the chassis, with a ground lead going elsewhere. Positive terminals were (and are) usually marked with red dots or plus signs. Make sure your replacement capacitors' positive and negative leads connect to the wires that led to the equivalent leads on the old capacitor.

I'd also suggest replacing any electrolytic capacitors in the audio stages. That may give you a bit more bass and overall volume.

Foam Surrounds

Q *I recently helped my mother rehab an old pair of speakers. The foam surrounding the woofer cones had turned to dust, and we replaced it with foam from a kit ordered from one of Audio's advertisers. The project was successful, and the speakers sound quite good again. But now I wonder about the foam surrounds on today's speakers. Have the manufacturers improved this material at all, or should I expect to see the new foam also deteriorate over time? If the material hasn't been improved, why do manufacturers continue to use it? Can anything be done to slow the deterioration? What other materials can be used in its place?—Daniel Pratt, King of Prussia, Pa.*

A According to Ken Kantor of Now Hear This, "Foam is typically more compliant than rubber and easier to glue to paper cones (but harder to attach to poly-

propylene). Foam also 'rolls' differently under dynamic conditions, so any effects on response that are related to edge-termination effects will be different. Most modern foam is treated against the ultraviolet light and microbial agents that used to decimate the old stuff, and the life expectancy for premium foam is as high as for other parts of the speaker. Tropical climates don't help, however."

Summing Bass Without Simmering Amps

Q *In the March '95 "Audioclinic," you stated that most subwoofers add the bass from two channels together to feed one driver with one voice coil. Please explain how this is done, inasmuch as some amplifiers can't tolerate having their right and left outputs connected to each other.—Allen Schramm, Tehachapi, Cal.*

A You're right about the amplifiers, but mixed-bass subwoofers don't connect the two channels directly to each other. Usually each amplifier channel feeds a stereo crossover whose two bass outputs are then summed together. Without the isolation provided by the crossover and summing circuits, the amplifier's output stages could be damaged.

Amplifier Bypass Tweaks

Q *I'd like to tweak my integrated amplifier to improve its sound. For one thing, I could bypass the U-shaped jumpers that bridge the preamp-out/main amp-in jacks. Is this a job I can do myself on the circuit board, or is it better left to a technician? To further improve sound quality, I want to bypass the fuse in the loudspeaker output. Would this be a simple modification?—August Timmermans, Bangkok, Thailand*

A If you're handy with a soldering iron, it should be a simple job to get inside the amplifier's chassis and solder a short jumper wire between the hot (center) connector of each channel's preamp-out RCA jack and its power-amp input jack. Each wire will replace the friction link of the U-shaped jumper with a permanent soldered connection. I do *not* recommend you attempt to do this at the circuit board; that job is best done by a technician. Whichever method you choose, I question whether you will be able to detect any dif-

ference in sound quality from bypassing a mere few inches of wire.

If your output fuse-holders are accessible, you can bypass the fuses by connecting a wire between the two terminals of each fuse-holder. But don't do it *unless* you've first made sure that these fuses are in series with the speaker output connectors and not in your amplifier's positive and negative power-supply rails. Fuses in these rails have no effect whatever on your amplifier's sound but do protect the loudspeakers from damage if an output transistor shorts out. (Such a short would cause excessive current to flow, which undoubtedly would burn out the loudspeaker's voice coil if the fuses were not in place.)

Hi-Fi VCR to Mono Dubbing

Q *When dubbing from a Hi-Fi VCR to a mono VCR, is a Hi-Fi track created or is the resulting copy mono? What is the best way to dub, Hi-Fi to mono or mono to Hi-Fi?—Mona Williams, Houston, Tex.*

A A conventional mono VCR is incapable of playing a VHS Hi-Fi track or recording one. A mono VCR will play back or record only the linear mono track on the edge of the videotape, which is read by a tape head similar to the head in an audio cassette deck. If you dub from a Hi-Fi machine to a mono VCR, you'll get a mono recording, the quality of which will be determined by the audio response of your mono VCR's tape head and electronics. Typically, the mono edge track yields adequate but certainly not high-fidelity sound.

There are two pairs of audio inputs and outputs, for the left and right channels, on a Hi-Fi VCR; there is just one audio input and one audio output on a mono VCR. If you have a choice, dub from the mono machine to the Hi-Fi VCR by connecting the single audio output of the mono recorder to the single lead of a Y connector. The remaining split connectors of the Y are hooked into the left and right audio inputs of the Hi-Fi machine. The resulting copy will still be mono, but the losses in sound quality won't be as dramatic as they would be when dubbing between two mono machines or from a Hi-Fi machine back to a mono machine.

Ideally, you should dub between two Hi-Fi VCRs—even with a mono signal—to best preserve the fidelity of the audio signal. **A**

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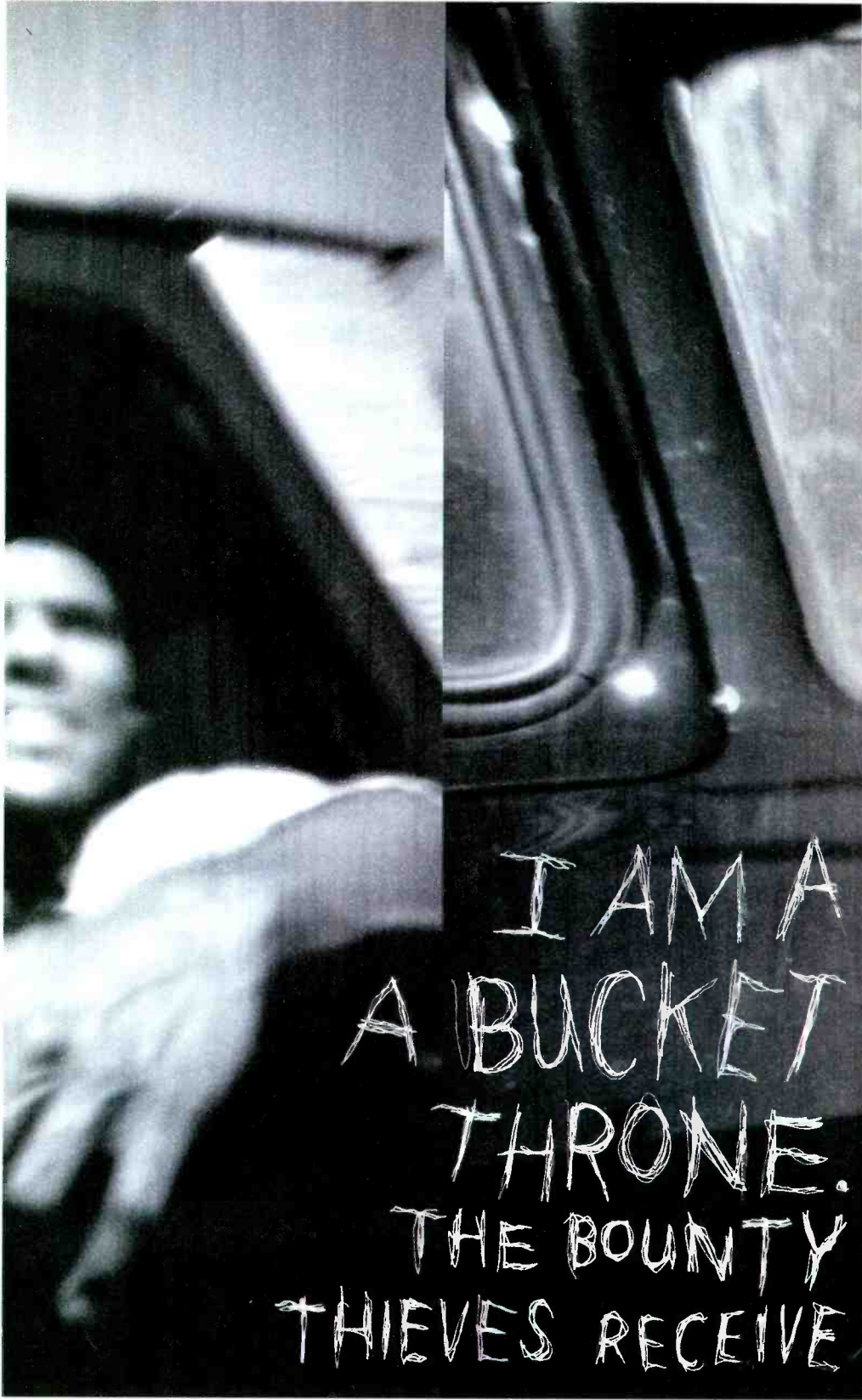
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I REMEMBER MONO



My first hi-fi component was this Lafayette speaker system, a \$15 enclosure with a \$10 driver inside it.

This year is not only *Audio's* 50th anniversary but my 15th year here, my 35th as an audio journalist. It's also about my 45th year as an audio enthusiast, which means I started very young. What got me going was an RCA jack on the back of, appropriately, an RCA big-screen TV. ("Big screen" meant 16-inch back then, and neighbors were convinced we'd go blind from its vast glare.) As soon as I figured out what the jack was for, I bought my first music system: an RCA 45-rpm changer and a mix of records, all for just \$25 in accumulated birthday money. (As I recall, the records included Mario Lanza's *Great Caruso* album, one actual Caruso record, "The Thing" and five other sides by Phil Harris, and a Spike Jones single.) The sound was actually quite good. That TV had RCA's Golden Throat sound system—which consisted, in this case, of an 8-inch speaker in a wooden baffle just

above the floor and, naturally, a tube amplifier.

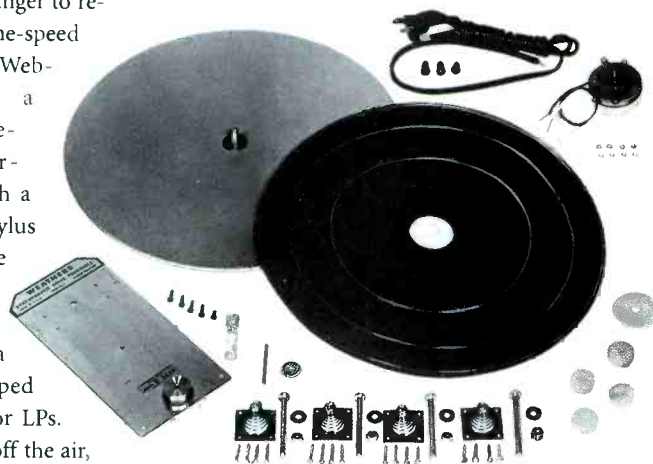
My folks and I soon realized that 45s alone would not do, so Dad bought a three-speed Webcor changer to replace my one-speed RCA. The Webcor had a flipover ceramic cartridge, with a sapphire stylus on one side for 78s and, on the other, a smaller-tipped diamond for LPs. For music off the air, we had a Motorola AM/FM radio in the dining room and, eventually, a terrific Delco AM radio in our car.

I first heard about hi-fi from my high-school chem teacher, who showed me the first component sound system I'd ever seen. He tried

to show off how loud it could play, but I was not convinced at first. "That doesn't sound so loud to me," I said, and he replied, "Then why are you shouting?" I was so used to the throaty distortion of radios and phonographs at high volume settings that I hadn't realized that a music system could be louder by far and still sound clean.

We couldn't afford a component system, but I nearly talked my folks into a crisp-sounding Stromberg-Carlson chairside console—nearly, but not quite. Instead, as I got ready for college, I bought a \$10 Lafayette Radio SK-98 8-inch driver in a \$15 Lafayette Troubadour bass-reflex speaker cabinet and spent \$10 on a Grommes-built, 12-watt Realistic integrated amp my girlfriend's father sold me. (Or was that \$12 for a 10-watt amp?)

My music source was still the Webcor. By now, I'd heard about stylus force, so I figured out the Webcor arm's force adjustment, a spring that could fit into any of three holes, and moved the spring to the hole that gave the lightest tracking. Then I bought a stylus gauge to see what force that yielded. The gauge could measure from 0 to 20 grams—and



A marvel of simplicity, the Weathers turntable kit cost only \$34.50, though I splurged and spent \$15 more for its motorboard and base.

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Forgotten today, the Stromberg-Carlson Perfectempo turntable introduced significant innovations.

the arm bottomed it with a loud “clunk”!! Time to replace the Webcor.

Its successor was a Weathers turntable kit and a Dynaco/B&O integrated arm and cartridge (which could track at a then-remarkable 2 grams), the cheapest good stuff I could find. Like most Weathers products, the turntable was unique. Turntables of the day had heavy platters, whose momentum ensured speed constancy and smoothness, driven by heavy motors through hard-rubber pucks, or idlers. When the turntable wasn't spinning, you had to pull the puck away from the motor shaft and turntable rim; otherwise, it would develop flat spots, which would cause wow and flutter later. The Weathers, by contrast, relied on an electric-clock motor for speed control. Since that motor had little torque, the platter had to be an ultra-light aluminum stamping. With such low torque, the drive and gearing could come from a *soft* rubber wheel, which didn't have to be moved away when not in use because it couldn't deform permanently. Whatever other turntables did, the Weathers did the reverse; sometimes, it even ran in reverse, until I stopped and restarted it.

The Weathers came out long before the famous AR turntable, which also used a light-duty motor. But the Weathers wasn't the first to do this, either. Even before I entered college, Stromberg-Carlson had a single-play turntable with a light motor that introduced an even more significant idea: Its platter and arm were mounted to a “floating” subplatform hung from springs beneath the turntable base's top plate. (AR usually gets credit for that idea, too.)

By now, I was meeting other hi-fi buffs, and learning from them. One guy in my dormitory was still using a 45-rpm changer



The octal socket on the Dynakit Mark III amp could power Dyna's own preamp or a Heathkit preamp like mine.

like the one I'd started out with, only his was feeding a 10-watt Pilot amp that drove a Klipschorn. Since he liked jukebox bass, he listened mainly to the hot new R&B records, running his changer's ceramic cartridge (which needed no RIAA equalization) into the Pilot's RIAA input and then turning up the loudness-compensation and bass controls as far as they could go. From my room, the next stairwell over and three flights up in a steel-framed masonry building, I could follow the beat if I walked barefoot. I wonder how boomy his car stereo would be if he were a kid today.

I soon replaced my used 12-watt amp with a used 20- or 25-watt Heathkit power amp and a Heathkit WAP-2 preamp that, like many preamps at the time, drew its operating voltages from the amp.

Reputedly, this sleek Fairchild turntable and arm were designed by Raymond Loewy.

When stereo came, I swapped the Heathkit amp against a 60-watt Dynakit Mark III amp, while my roommates bought a matching amp, a pair of speakers (AR-1s), and an H. H. Scott stereo preamp and tuner. The only “binaural” broadcasts were AM/FM simulcasts, so the tuner had independent AM and FM sections that could feed separate channels. Each section was tuned by its own vernier-crank dial, which made station selection a deliciously sensuous experience. For record-playing, we used a glamorous-looking Fairchild turntable and arm, probably with a Fairchild cartridge.



When I moved to a single room, I could no longer share roommates' equipment. So I shifted back to mono, using my Dyna amp to power my old Heath preamp. My speaker was still the 8-inch Lafayette SK-98, which you might call a 1½-way driver: The center section of its cone was stiffened and decoupled from the outer section to enhance its treble output. The tiny, honky \$15 enclosure had by now given way to an R-J enclosure designed for a Wharfedale driver. When I bought another R-J, complete with Wharfedale driver, I ran it in parallel with the R-J/Lafayette system; the combo seemed to sound better than either one alone. (When I finally graduated to my own stereo system, I replaced the Lafayette driver with another Wharfedale, so the channels



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Wes Phillips, *Stereophile Guide to Home Theater, Spring 1997*



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Putting my Lafayette 8-inch speaker in this R-J cabinet enhanced its sound; replacing the Lafayette with a Wharfedale driver improved the sound even further.



The "exclamation-point" dial pointer on Eico's HFT-90 tuner was a magic-eye center-tuning indicator.

would match.) One fine spring day, a girl from Bennington came by and cried out, "You've got my daddy's speakers!" I started to sputter that I'd bought them fair and square, only to discover that her father was Bill Joseph, who'd designed the R-Js.

I bought and built an Eico HFT-90 tuner kit, but I soon swapped it for a Magnecord PT-6 tape recorder. That was cheap for a PT-6, but the prior owner had disassembled it and couldn't get it back together. Using a Sams PhotoFact service manual, one of my ex-roommates put it back together for me.

By joining the college radio station, WYBC, I got my hands on fancier stuff, such as an Ampex 350, and started learning about mikes and how to use them. (We used to tape or broadcast events around the campus and did a weekly live remote from a nearby jazz club.) I also got my hands on some Magnecord parts the station was no longer using, including reel extension arms and an intriguing head assembly.

The extension arms enabled me to use 10½-inch reels for the first time. The arms bolted to the sides of the PT-6 recorder and were driven by rubber belts that connected them to the recorder's reel holders. That

was a big advance, because the only way I could get good fidelity from the PT-6 was to run it at 15 ips; at that speed it could record and play out to 15 kHz, while its response at 7½ ips ran out to only 7.5

kHz. The reel arms worked fine for recording and playback, but the Magnecord's reel-motor torque was a bit low for good fast-forward and rewind; fast-winding took forever to get up to speed, and the reels shook like mad once it did so.

The head assembly was "binaural," with staggered half-track record/play heads for each channel and a full-track erase head. I figured I could use these to make half-track mono recordings instead of full-track, cutting my tape costs in half. Since I'd doubled that cost by running at 15 ips, that would put me right back where I'd started. The new head assembly bolted in where my separately housed full-track erase and record/play heads had been. I could now *play* half-track tapes, but I couldn't *record* a second track without simultaneously erasing the first one. To get around that, I experimented to find what resistance would match the erase head's impedance at the PT-6's bias frequency, and then I installed a double-pole double-throw switch that would select ei-

ther that resistance or the erase head. (Just bypassing the erase head would increase the bias current to the record head.) I'd switch the erase head on when I taped track 1, then switch it off when I turned the tape over for track 2. As long as I remembered to do this, it worked fine.

Eventually, a few years after college, I replaced the Magnecord with something far niftier, if equally outré, a Premier Tapesonic. Premier Electronic Labs was basically a one-man outfit, but it built fine decks for very little money. (My Tapesonic, a 15-ips machine that took 10½-inch reels, cost me \$565.) Marty Gersten, later a speaker designer at Rectilinear and Ohm, worked there when he was very young. He told me that the company used surplus parts whenever possible; when a given part was no longer available or no longer cheap, Premier's proprietor would redesign the deck around some other part. My Tapesonic was a half-track stereo model with a two-speed motor; by attaching a capstan sleeve, I could increase its speeds from 3¾ and 7½ ips to 7½ and 15 ips. I had the machine built into two cases instead of one; I was doing a lot of live recording up in choir lofts, and I preferred climbing all those stairs with a 45-pound package in each hand than with an 80-pounder in one hand and nothing in the other. Eventually, I made two small modifications of my own: I took an empty metal box that had once contained 4AG fuses, glued it to the deck to hold the capstan sleeve when I wasn't using



My Premier Tapesonic served me long and well.

it, and lined it with moleskin so it wouldn't scratch. I also added a switch to disconnect the take-up motor, so I could dump unusable sections of a tape into the wastebasket when I was editing.

By the time I bought my Tapesonic, in the middle '60s, the hi-fi world and I were going mainstream. Products were becoming more standardized, and I was becoming able to afford them. As a reviewer, however, I did get to try some interesting components that history has since passed by.

One was the 3M Revere tape cartridge system. It was no match for my 15-ips Tapesonic, but I thought it certainly outperformed my antique Magnecord. It was also the easiest-loading changer I've ever used; the cartridges sat in loose stacks, with the input stack slowly sinking as the output stack rose. If you wanted continuous music, all you had to do was come by every few hours and shift some cartridges from the output to the input stack.

Another interesting component was an Akai open-reel tape deck that doubled as a video recorder. In either mode, it took 10½-inch reels of quarter-inch tape. For audio, you'd use standard tape and thread it over a standard head assembly; for video, you'd use a special tape and thread it around a big head drum near the middle of the deck's top plate.

Then there were quadraphonic oscilloscopes, designed to help you set up your system by checking signal levels in each of its four channels. Today's surround systems use a better method, playing test tones through one speaker after another while you adjust levels from wherever you are sitting. But the quad 'scopes did have other functions, such as displaying audio waveforms. Pioneer's quad 'scope (which I still have, together with a matching four-channel preamp) could also display the output from a tuner's multipath jack; when I lived in the canyons of Manhattan, it was a big help in aligning my antenna.

My first CD player, a Technics, had a vertical layout, with a window through which I could watch the disc spin. It looked exciting then but would just look exotic today, 15 years later. Which makes me wonder: How long will it take before today's gear looks as exotic, and evokes as much nostalgia, as the stuff I scrounged together way back when? A

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STUPID IS AS STUPID DOES



What's the term for not learning from one's mistakes? Or what do you call being angry with yourself for being surprised by the inevitable? I'm sure the Germans have some cool nine-syllable word for both, but let's just stick with "stupid" to cover either mode of behavior. That's how I feel for allowing myself to expect DVD to have rolled out without a hitch and with some kind of sensible marketing.

It's like this: Even though I was born well after the end of World War II, I have lived through the launches and failures of more formats than a half-century should yield. Without turning to my library of yellowing hi-fi magazines, I can tell my son

that I was born just before the 7-inch 45-rpm disc became the format for singles and the 33 $\frac{1}{3}$ -rpm stereo LP became viable.

As a kid, I saw the first cassettes and even some other, pre-Elcaset open-reels-in-shells formats. There were 8-track cartridges, myriad analog four-channel systems that were 25 years too early, dbx-encoded LPs, and that absurd RCA system for videodiscs that used a stylus. I was actually a retailer when the great Betamax-versus-VHS-versus-Video 2000 battle took place. And

BEFORE CD HAD REACHED ITS BAR MITZVAH, THE BEAN COUNTERS HAD LAUNCHED OTHER DIGITAL FORMATS.

then there are all the digital delights, from DCC and MiniDisc and DAT to the dominant 5-inch CD-based systems.

Why this wander down Memory Lane? It's simply to remind all and sundry that the hi-fi and video industries refuse to learn from past mistakes or to respect the consumers they bleed. So the industry is just as guilty of arch stupidity for launching yet another format before it's ready as I am for letting it surprise me.

By now it's painfully obvious that the cause of all our woes is the decreasing amount of time the industry is willing to allow to pass between format launches. Black vinyl discs lived three-quarters of a century before CD reared its head. Open-reel tape (which was never anything other than a niche product) was around for 20 years before the cassette emerged. But before CD had even reached its Bar Mitzvah, the bean counters were launching other digital formats, each and every one succeeding at nothing more than confusing the consumer. DAT? DCC? MiniDisc? Who actually thought that anyone needed them, let alone wanted them?

At least DVD has one bit of backward compatibility in its favor, one which will serve it much better than did DCC's backward compatibility with analog cassettes. DCC's ability to play analog cassettes wasn't enough to woo consumers when they learned that it couldn't record on them as well. As DVD—for the foreseeable future—is a playback-only medium, its ability to play conventional music-only CDs is enough to convince a number of indecisive buyers to invest in the new format's hardware. It means that they will have access to 50,000+ CDs to play on the day they bring home their shiny new machines,

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should actual DVD software be a long time coming. And, should DVD totally flame out, these folks will still have a device that can serve as a normal CD player. Or, to put it another way, DVD (hardware) is a no-lose situation for the buyer for that reason alone.

For this, the hardware industry should be patted on its collective, if pointed, little head. Some of us think that those who gave the go-ahead for DVD when CD hasn't even penetrated 40% of the (prosperous) world's homes should have their ears filled with battery acid. But at least they did do the one decent thing this time by ensuring that no owner of a DVD player will be stuck with a future software-free zone. Even so, how can the industry warrant the confusion caused by a new format, itself a variant of two other systems yet to reach their own market plateau? For every seasoned audiophile who thinks that CD is old hat after 15 years, there are 10,000 civilians who still think it's the future. As for the second system that spawned the bastard mutant DVD—home cinema—well, that's had even less market penetration than CD, if you define home cinema as multichannel sound and a bigger TV and not just the ownership of a VCR.

Because things change quickly, please realize that this is being written roughly two months before it sees print. So anything written today about DVD could be rendered meaningless in a flash. It's just that a mere three weeks ago, I attended a press conference here in the United Kingdom at which a key player in DVD's development showed its new wares for 1997 to a large contingent of journalists. But solid DVD info? Zilch. The company couldn't say much about DVD-Audio standards, software availability (film or audio-only), or what multichannel surround system is likely to be foisted off on Europeans. And nothing on the question that keeps me surfing the Net: Have the geographical release zones been established yet? [Yes.—Ed.]

Now I, as an expatriate American, know that 99.999% of the United States population thinks that the world is flat and that venturing beyond Cape Cod or Malibu will result in one becoming fodder for those who live near the parts on the map that say "Here Be Monsters." Quite simply, you guys don't give a damn where the various other

countries fit into the scheme of releases, so long as Americans get their DVD releases before everyone else (and with Dolby Digital, to boot). Meanwhile, people in Greece are wondering if their DVD releases will be tied into, say, Paraguay, while Koreans might have to share their discs with Ugandans or Laplanders.

Why is this important? So that DVD doesn't end up half-realized in the rest of the world, like laserdisc. Penetration of laserdisc never reached anything like the levels it should have because the film industry ensured that only the United States (and Japan, of course) has been fed a steady flow of discs worth owning. The excuse? "Uh, gee, guys, America and Japan use NTSC but you use PAL, so tough luck." And, to be fair, NTSC versus PAL was a major technical concern.

But the hardware boys made laserdisc players that could play both formats, only it happened too late. So now it's about as easy to buy NTSC laserdiscs in Europe as it is to buy crack. No, forget that: It's easier to buy crack.

What everyone conveniently forgets is that laserdiscs stayed high-priced in America because the U.S. on its own wasn't big enough to endow laserdiscs with economies of scale. In other words, if the same laserdiscs had been available all over the world, they would cost less today and sell in greater numbers, in turn blessing the film industry with more profit than it can make by simply fleecing hard-core laserdisc-loving videophiles.

With DVD and the wonders of digitalia, there's no need to create another Us and Them scenario. Nearly every TV sold in Europe this decade accepts NTSC signals, but that's not the real problem: It's Hollywood, which wants as many bites from the cherry as it can possibly nibble. And Hollywood has lots of teeth, microscopic enough to make a meal of a maraschino.

Stated simply, video DVDs are to be sold according to zones. If the software boys have their way, they could even insist (horrors!) that music-only DVDs be sold similarly, with the same regionalism. A DVD bought in the U.S. will not play on a machine purchased in, say, Switzerland, by virtue of a chip inside the player that tells the machine that its owner was a naughty boy for buying a DVD copy of *Ace Ventura*:

When Nature Calls while on holiday in Orlando, when he should have waited another six months and paid twice as much for the official Swiss release.

This is the kind of absurd behavior that could only come from the software industry, the same paranoids who think that some guy in Copenhagen pressing 1,000 bootleg copies of a Nine Inch Nails gig that's never going to be released officially will cause

the downfall of Western Civilization. The same neurotics who swore that analog cassettes—never mind DAT—would lead to so much home taping that the record industry would disappear. DVD protectionism comes in the form of ensuring that discs bought in the country that enjoys the lowest prices in the world (the U.S.) won't play anywhere else. So film companies can release movies in U.S. theaters six months ahead of, say, Europe. Then, when the VHS tapes or the DVDs come out in the U.S., the movie can be released to theaters in Europe without any worries about its public having had access to tapes or DVDs. And six months or a year later, the Europeans will get their DVDs, with a 50% higher price tag. So the U.S. discs can stay under \$25 or be sold for whatever price is deemed supportable.

What? You didn't know that audio CDs in the U.S. were subsidized by Europe, where a regular CD can cost upwards of \$20? And still I'm amazed when I read letters in the American press about the rip-off prices of CDs in the U.S.

Stupid, huh?

A



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A NICE PAIR

Paradigm's Mini Monitor has gone metal. . .



I love the sound of a really good two-way 6-incher. There's just something about the simple, basic coherency of a small woofer, a tweeter, and a simple crossover in a well-damped box that tickles my ears in a way big tower speakers almost never do. I remember going to the hi-fi hut with my mom to pick out my Bar Mitzvah gift (she still doesn't know I faked the whole service by memorizing the Hebrew portion phonetically) and deciding on the smallest speakers in the place, a really nice pair of B&W two-way 6-inchers. Even back then, the coherency and rightness of the two-way 6-incher sound seemed so much more musical than the sound of the bigger multiways the store was pitching.

Since then, I've enjoyed a string of great two-way 6-inchers in my listening room, including the late, great Spica TC-50, the ProAc Response 2, and the NHT SuperOne. In fact, I usually find that my favorite speaker in any given manufacturer's line is a two-way 6-incher. The big multiway towers might have better bass and go louder, but I usually hear all kinds of lumpiness and deviation through the midbass and lower midrange that I don't hear at all from the two-way 6-incher. That is why I am a big fan of the subwoofer/satellite setup: You can get all the bass you want to dial in

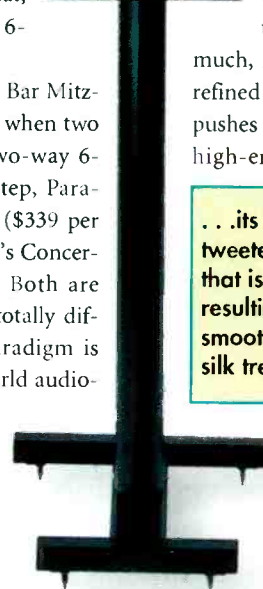
and still keep that great, coherent, two-way 6-incher sound.

Recently I felt like a Bar Mitzvah boy all over again when two pairs of great new two-way 6-inchers hit my doorstep, Paradigm's Mini Monitor (\$339 per pair) and Sonus Faber's Concerto (\$1,850 per pair). Both are good, but they serve totally different buyers. The Paradigm is perfect for the real-world audiophile on a budget, while the Sonus Faber is the kind of high-art, Italian-leather-wrapped, gorgeous slab of speaker that says, "Take me, love me, whisper fake Hebrew in my ear."

The Paradigm Mini Monitor is an updated version of the popular Mini-Mk3 (\$330 per pair), which has long been one of my

The classy Sonus Faber made a grown Greenberg cry.

all-time favorite speakers in its price range. This new speaker has kept the same 6-inch polypropylene woofer and rearported enclosure but has traded in the older speaker's soft-dome tweeter for a higher-quality, 1-inch metal



. . . its tweeter, that is, resulting in smooth-as-silk treble.

dome borrowed from Paradigm's upscale Reference line.

Is the new tweeter worth five clams more than the old model? Man, is it ever! Along with the NHT SuperOne, I thought the Paradigm Mini-Mk3 produced the best sound you could get from a speaker under \$350 per pair. But the new tweeter sounds

much, much smoother and more refined than the old driver, and it pushes the Paradigm into serious high-end territory. I've heard

highly regarded \$2,000 two-way 6-inchers that could not keep up with the Mini Monitor.

In fact, the Mini Monitor's metal-dome tweeter is so refined, it gives the speaker the impression of being a little on the reserved side. You get used to a bit of

treble zing as par for the course in this price range, but the Mini Monitor's high end is so smooth, clean, and airy-sounding that it's almost weird to hear it coming from a

speaker that sells for \$339 per pair. When I heard treble this pure from Paradigm's same-tweetered \$650 Reference Studio/20 (its high-end two-way 6-incher with a Kevlar woofer), it made more sense. That is the kind of hyper-clean, smooth-as-silk treble

I expect to hear from expensive monitors, not from budget boxes. And certainly not from \$339 budget boxes that do most everything else so right, too.

Since I hauled out the old Mini-Mk3s for comparison back when I



reviewed NHT's \$350-per-pair SuperOnes (*Audio*, August 1996), I schlepped the NHTs out for comparison with the new Paradigms. Both speakers, as well as the Sonus Fabers, sat atop heavy, sand-filled 24-inch Merrill speaker stands and were hitched with Kimber 8TC speaker cable to an Aragon 8008 amplifier connected to a Theta Digital Casablanca surround pre-amp. CDs were played on a Theta Data III transport, and LPs on a Rega Planar 3/Sumiko SHO/McCormack Micro Phono Drive rig. Everything was connected with Kimber Silver Streak interconnects and Canare 75-ohm digital/video cable and plugged into API Power Pack AC filters.

Back when I compared Paradigm's older Mini-Mk3 to the NHT SuperOne, I loved both speakers but ultimately gave the nod to the SuperOne for its greater neutrality and detail. But with the Mini Monitor, it's more of a tossup. I still think the NHT has a more natural-sounding midrange and

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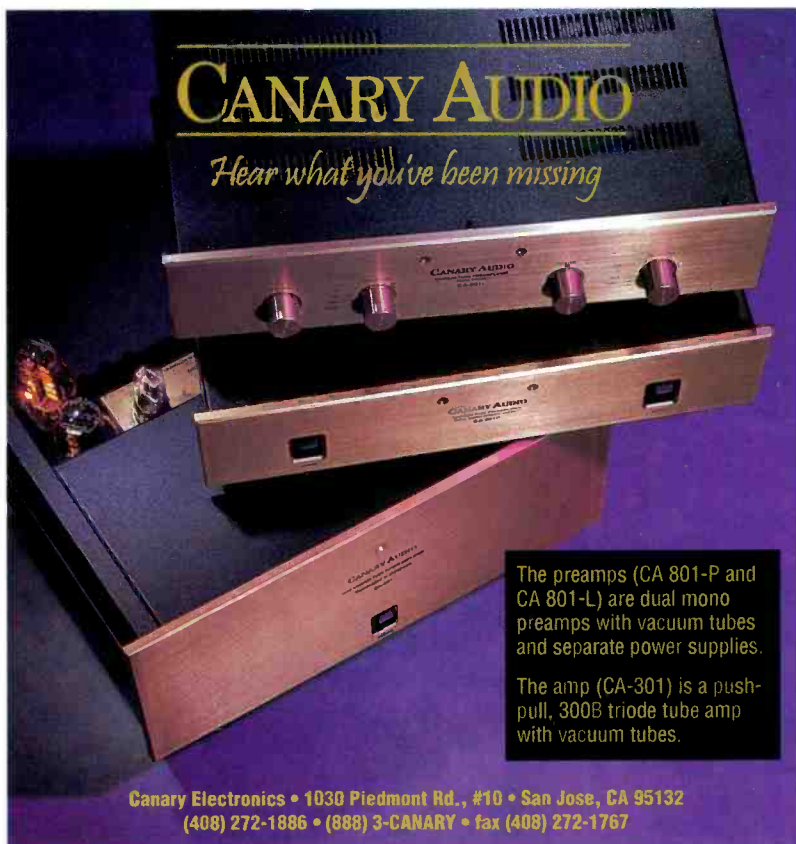
more clearly focused imaging, but the new Paradigm is smoother and cleaner in the highs, with greater detail and transparency. The NHT is no slouch in this area, but the Mini Monitor's new tweeter endows it with more of that elegant, refined treble character that hardcore audiophiles are willing to fork over the serious long green for. Now that you can get the same level of treble purity for just \$339 per pair, do I hear the sound of exotic, wood-grained \$2,000 two-way floor-standers falling over? I like that sound.

One \$2,000 two-way that is definitely *not* falling over is Italy's latest buono loud-speakeroncini, Sonus Faber's Concerto (\$1,850 per pair in walnut, \$2,100 in gloss black). I could tell you it's got a 6-inch ported woofer, a 1-inch soft-dome tweeter, and a minimalist first-order 6-dB/octave cross-over, but what I really want to tell you about is the way this speaker looks. The ones that Sumiko, the U.S. importer, sent me have

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thick, rounded panels, finished in high-gloss piano-black lacquer, and a full wrap of rich pebble-grain leather covering the entire front, top, and bottom of the cabinets. These speakers are so freakin' beautiful they make you want to cry. There was a time I would've laughed at a guy who could cry over the beauty of a speaker's cabinetry, but I have become that guy and I am not ashamed.

I first heard the Concertos in January at the Winter Consumer Electronics Show, and my impression was, "Ah ha! The first

Sonus Fabers with treble. Wash them and send them to my tent." See, I've always liked the various Sonus Fabers I've heard, from the top of the line Extrema to the cute li'l Minima. But as much as I admired these expensive Italian speakers for their relaxed musicality and unbelievably cool looks, I found them too dull-sounding in the treble. I loved the way they looked, but I could never really warm up to them.

The Concertos, on the other hand, have a much more lively treble than the other Sonus Fabers. They're not too bright, and

they're not too dull—they're juuust right. Cymbals sound like shimmering metal instead of ffffffft. Whereas the other Sonus Fabers can sound dark and distant, the Concertos let you hear all the little details in a recording laid out in front of you. This is, of course, a matter of taste; some people don't like to hear all the little details, preferring the dark, rich, mochacino presentation that is the classic Sonus Faber sound. I'm not one of these people. I like to hear what's on the recording. It's called "neutrality," and the Concertos come closer to it than any other Sonus Fabers I've heard to date. When I first laid eyes on them in Vegas, Sumiko's Stirling Trayle told me he finally had a pair of Sonus Fabers with Corey treble, and he was right on the money.

In fact, the Concertos have enough treble energy that you can actually mate them with a warm-sounding tube amp and still get great sound. In addition to driving the Sonus Fabers with the very neutral solid-state Aragon 8008 amplifier, I also tried them with Marantz's new reissue of the classic Model 9 mono tube amps. I'd never dream of hooking up other Sonus Fabers to a warm, vintage-sounding tube amp, but the combination of the Marantz reissue Model 9s and the Concertos 9s was really, really nice. It had the kind of golden tone that made me want to lie back on the couch with a nice fat cigar and listen to nothing but black female jazz singers while dreaming they'd give the time of day to a guy who writes about hi-fi for a living.

Both the Concerto and the Paradigm Mini Monitor benefit from the addition of a tight, audiophile-approved subwoofer to fill in the lowest octaves of bass. However, both have enough usable low end that you can fly them solo in the meantime. Good-quality stands are mandatory; even if you go with the budget Paradigms, you'll want to pop for some heavy, rigid, sand-fillable stands from the likes of Target, Merrill, or Sound Anchor if you want to hear any kind of bass energy and image focus. (Sumiko sells some high-end stands specially designed for the Concerto under its own Franklin and Lowell brand, too.)

A really good two-way 6-incher is still your safest bet for the best sound, and both the \$339 Paradigm Mini Monitor and the \$1,850 Sonus Faber Concerto carry my strong recommendation. A

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DATE	DEALER	DATE	DEALER	DATE	DEALER
Thursday, April 17, 1997 7:00pm	Genesis Audio 23684 El Toro Road El Toro, CA 92630 (714)830-5000	Saturday, May 3, 1997 2:00pm	Sound Advice 351 N.E. 51st Street, Yamato Rd. Boca Raton, FL 33431 (561)994-4434	Saturday, June 7, 1997 1:00pm	Home Entertainment 5310 Kirby Drive Houston, TX 77005 (713)526-4317
Friday, April 18, 1997 7:00pm	GNP Audio Video 1254 E. Colorado Blvd. Pasadena, CA 91106 (818)577-7767	Saturday, May 10, 1997 1:00 pm	Audio One 3200 Steeles Avenue West Toronto, Ontario L4K3B8, Canada (416)665-0749	Sunday, June 8, 1997 1:00pm	Sounds Like Music 2734 Westbell Road, Suite 1306 Phoenix, AZ 85023 (602)993-3351
Saturday, April 19, 1997 2:00pm	Audio FX 1415 Howe Avenue Sacramento, CA 95825 (916)929-2100	Thursday, May 15, 1997 7:00pm	United Audio Oaks of Oak Brook 1600 W. 16th Street Oak Brook, IL 60521 (847)205-1950, ext. 168	Friday, June 20, 1997 7:00pm	Woodbridge Stereo 751 Amboy Avenue Woodbridge, NJ 07095 (908)636-7777
Sunday, April 20, 1997 1:00pm	Performance Audio 2847 California Street San Francisco, CA 94115 (415)441-6220	Friday, May 16, 1997 7:00pm	Paulson's Audio & Video 37670 West 12 Mile Road Farmington Hills, MI 48331 (810)553-4100	Saturday, June 21, 1997 1:00pm	Sound by Singer 18 E. 16th Street New York, NY 10003 (212)924-8600
Thursday, May 1, 1997 7:00 pm	American Audio 101 Verdae Blvd., Suite 800 Greenville, SC 29607 (864)288-4293	Friday, June 6, 1997 7:00pm	Bjorn's 530 N.E. Loop 410 San Antonio, TX 78216 (210)828-3237	Sunday, June 22, 1997 1:00pm	Lyric Hi Fi 146 East Post Road White Plains, NY 10601 (914)949-7500
Friday, May 2, 1997 7:00pm	Hi Fi Buys 3135 Peachtree Road N.E. Atlanta, GA 30305 (404)261-4434				

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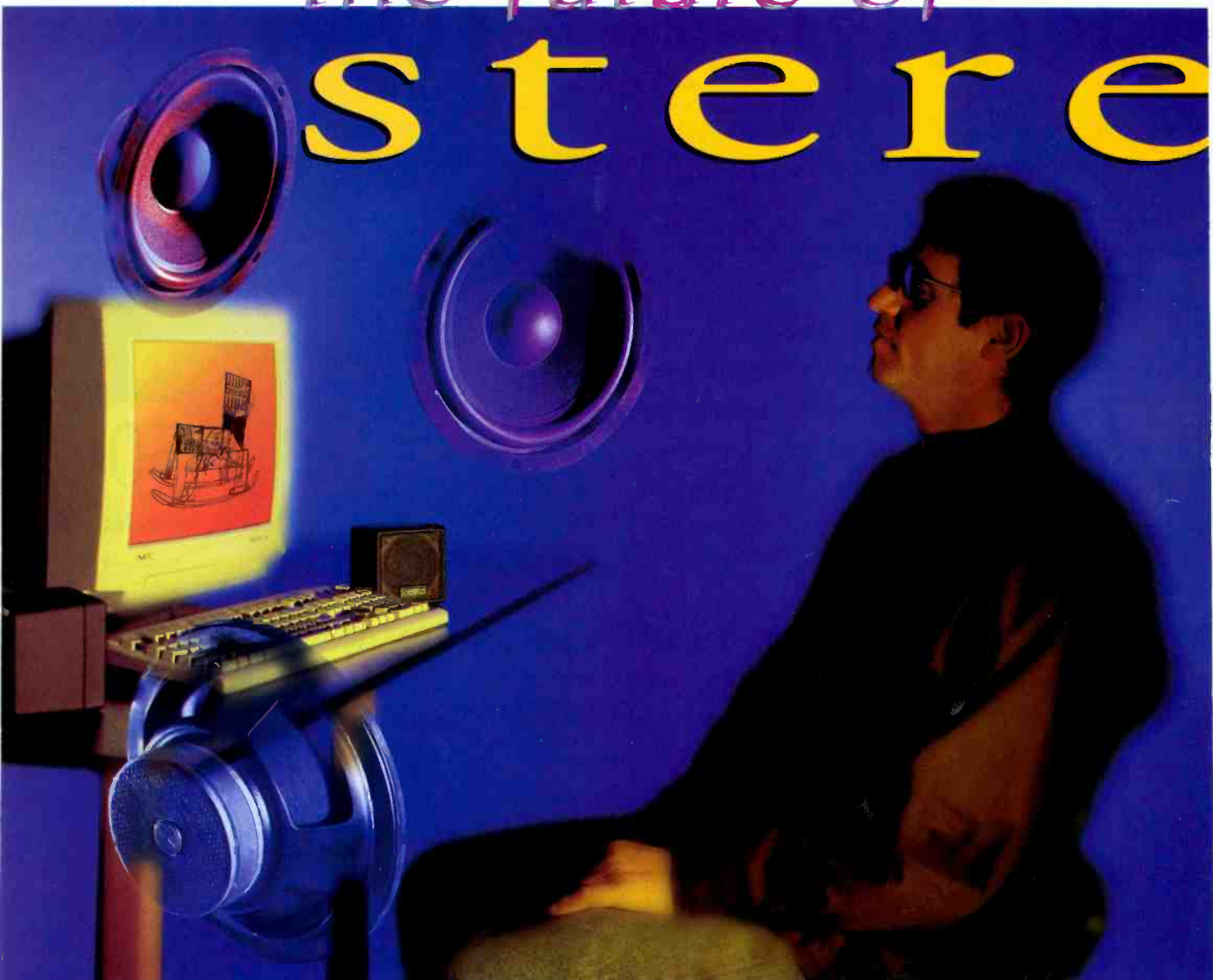
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Two-speaker techniques for three-

The capture, storage, and reproduction of musical and other acoustical events remains a challenge, even after decades of technological developments. Last issue, in discussing multichannel approaches, I concluded that genuine progress is being made in bringing directionally and spatially enriched listening experiences to multiple as well as individual listeners. In this issue, I will explore the alternatives available when we attempt to imitate natural hearing.

It seems that every decade or so, binaural sound enjoys a revival. The technique was first demonstrated in the late 19th century,

and one can only imagine how bad it sounded. Since then, acquired knowledge and technology have led to improvements, but even today binaural sound is not widely known or understood. Yet soon it will be popular, and many of us—and most of our kids—will experience binaural “3-D” audio in interactive computer games. Others will enjoy multichannel sound reproduced through five phantom speakers but actually generated by just two *real* speakers or a pair of headphones.

In Part I of this article, I discussed Ambisonics, a system that attempts to capture a

three-dimensional sound field and then immerse the listener in a facsimile of that sound field as reconstructed by numerous speakers. Binaural techniques attempt to capture the spatially encoded sounds that enter the ear canals of an artificial “listener” at a live event and then deliver those same sounds to the ears of real listeners, thereby reconstructing the *perception* of the original three-dimensional sound field at different times and places.

Binaural means two ears. When you listen with your two ears, you are hearing in three dimensions—in fact, in perfect 3-D!

PART II

by FLOYD E. TOOLE

aural illusion works very well, it is not perfect. Listeners usually report a pleasantly spacious illusion, but sounds that should be perceived to be far out in front of the listener are instead localized inside, very close to, or even behind the head. Because most sounds of interest are outside and in front of us, within our field of vision, this is a serious problem.

In the '70s and '80s, numerous binaural recordings were made. Some involved whispering in the left or right ear and noises that sounded like a barber's scissors at the nape of the neck. Heard through headphones, these demonstrations sounded very realistic. Distant sounds to the side and rear were also convincing. However, although some people were persuaded that voices and noises moved convincingly outside and to the front of the head, for most listeners it was a disappointment.

These perceptual errors have been attributed to a number of factors: the lack of a visual confirmation of what is heard, the fact that the auditory illusion tracks head movements, the fact that the mannequin's ears probably are not exact replicas of the listener's, headphone performance errors, and so on. In a static listening situation, the eye/ear/brain system is not fooled. Adding correlated visual cues and a dynamic head-position tracking system, with appropriate DSP corrections, is a great improvement, as has been demonstrated in the best virtual reality (VR) systems. Personalizing the system to match the listener's ears is another possibility. But with all of that, it has to be said that this form of binaural reproduction is probably not yet a solution for the masses.

Crosstalk Cancellation

What is really needed is a delivery system that makes the sound sources convincingly

Floyd E. Toole is Corporate Vice President of Engineering for Harman International. He is a past president of the Audio Engineering Society and a Silver Medal Award winner. Prior to his move to the United States, he spent 25 years with the National Research Council of Canada as a scientist and psychoacoustician. His Ph.D. thesis dealt with stereo localization and binaural hearing.

Photograph: Robert Lewis



dimensional sound

All of the acoustical information needed for 3-D auditory illusions is contained in the sounds arriving at our ears. Therefore, if we could encode recorded sounds in the appropriate manner and reproduce them for each of our ears, we should be able to reproduce 3-D audio experiences.

It has long been acknowledged that, in theory, the most accurate recording technique is binaural: The ears of an accurately modeled mannequin or dummy head are fitted with microphones, and the left- and right-ear signals are recorded and subsequently replayed through headphones to

the ears of a listener (Fig. 1). A Bell Labs study of auditory perspective came to that conclusion in 1934 [1].

Ideally, the listener should experience an auditory illusion identical to that which would have occurred if he had taken the place of the mannequin at the original performance. As it turns out, although the bin-

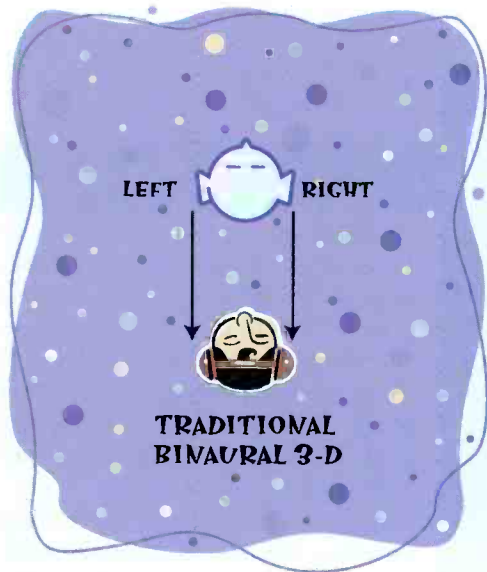


Fig. 1—In traditional 3-D binaural recording, mikes fitted in the ears of a dummy head record sounds that are reproduced, via headphones, in the ears of the listener.

external and in front. We need to be able to reproduce binaural signals through speakers. But the problem is that the sound from each speaker travels to *both* ears; consequently, there is crosstalk, or leakage, of sounds from the left speaker into the right ear and vice versa.

However, if we know where the speakers are located and where the listener is located relative to them, it is possible to calculate or measure the unwanted crosstalk components. Then, in a component upstream of the speakers, the sounds can be processed so that when they arrive at the ears an acoustical “algebra” occurs, resulting in the left speaker communicating only with the left ear and the right speaker with the right ear (Fig. 2).

The crosstalk-cancellation concept was patented by Atal and Schroeder/Bell Telephone Laboratories in 1966 [2] and used by them to study concert hall acoustics. In that study, binaural recordings made in different venues were reproduced through speakers in an anechoic chamber. The system did work, but it required an anechoic chamber and a listener locked into a sweet spot.

Commercial versions of crosstalk cancellation have appeared over the years, mainly as methods to expand the perceived soundstage yielded by two-channel stereo. Of these, probably the best known are Carver’s Sonic

Holography [3] and Polk’s SDA speakers [4]. Lexicon’s CP and DC series of surround processors also include a binaural “Panorama” mode that is a crosstalk canceler.

In the 1980s, Duane Cooper and Jerry Bauck focused on the original problem of accurate binaural playback and developed a series of improvements that made speaker-based listening more practical and economical [5]. These patented innovations yielded a technique that is simpler to implement than the Atal and Schroeder model and less demanding of the listening environment. Further, it’s more tolerant of head movements, and it degrades “gracefully” as the listener moves out of the sweet spot. The Cooper-Bauck Transaural technology provided the basis for Harman’s recent VMaX (Virtual Multi-Axis) system. In the best

systems, the sweet spot, or, more accurately, the sweet region, is about the same as it has been in stereo for the past 40-odd years: long, tall, and narrow. The difference is in the auditory reward. In stereo we get to hear the featured artist floating midway between the speakers. But in speaker-based binaural listening, we can be transported to another three-dimensional world.

This system can work remarkably well. Obviously, it works best when the listener is in the predominantly direct sound field of the speakers. This means that close listening, as at a computer workstation, is likely to work well. At greater distances, one must pay attention to reflected sounds, which can be done by controlling the speakers’ directivity or the absorption characteristics of the room’s reflecting surfaces. Best performance will always be achieved when the listening geometry matches that for which the crosstalk-cancellation filters have been designed.

Since the sounds come from speakers, head movements simply confirm that the sounds originate outside and in front of the listener. Whereas in headphone reproduction of binaural signals it is diffi-



cult to create convincing illusions of sounds originating in front of the listener, with speakers it is difficult to create illusions behind him. However, in practice, when the sound images are in motion and if there are visual cues that correlate with the sound movements, most people drift into a susceptible frame of mind in which even these front/back uncertainties disappear.

That there should be these front/back reversal problems in headphone and speaker reproduction of binaural programs is not surprising. The problem is the location of our ears and the front/back symmetry that exists. Auditory cues alone are not enough for us to make a completely reliable front or back identification. In tests of listeners’ natural localization capabilities, front/back reversals are frequently observed. In the course of our everyday lives we rely on head movements and visual cues to keep things straight. Removing or altering those normally reliable cues makes things go perceptually wrong. Since much of our natural auditory localization relies on *plausibility*, we

Illustrations: Paragraphics

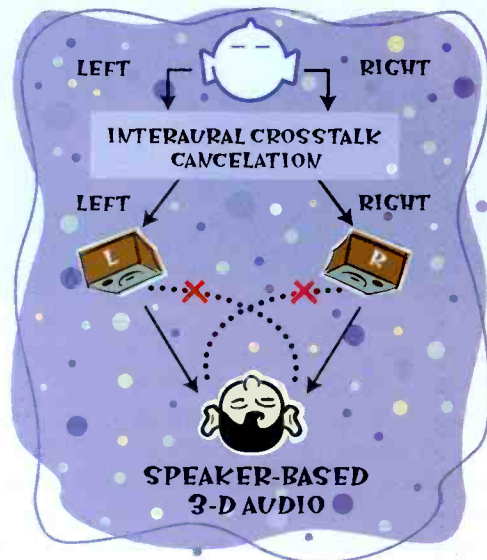


Fig. 2—Interaural crosstalk cancellation enables playback of 3-D binaural audio over speakers by canceling the leakage of left or right speaker sound to the opposite ear.

Acknowledged the most accurate is binaural.

must conclude that the perception of a sound source outside and in front the head is less plausible in headphones than it is through crosstalk-canceled speakers. The reverse is apparently true for sound sources behind us. In-head localization must therefore occur when nothing else seems plausible [6, 7, 8].

Binaural Steering

Because the music industry is committed to multitrack, multimike recording methods, 3-D audio will not be popular so long as it depends on dummy-head recording techniques. By using DSP techniques, however, it is now possible, in real time, to electronically synthesize the left- and right-ear signals appropriate for any direction (Fig. 3).

To accomplish this we must know, for every direction we wish to synthesize, how the sound is modified on its way to the ears. This is determined by positioning a known sound source at various points in space around a head and measuring the head-related transfer functions (HRTFs) that correspond to each of the ears. The HRTFs are measured as impulse responses (amplitude versus time) or as the Fourier equivalent, amplitude and phase versus frequency. With all this information

stored away, the binaural directional synthesizer can alter any single-channel signal to the left- and right-ear signals appropriate to the chosen direction, a process known as binaural steering.

This process has been widely used since about 1980, when affordable computers of sufficient speed and power became available. Among the best-known endeavors of this sort is the collaboration of Elizabeth Wenzel at the NASA-Ames Research Center, Fred Wightman and Doris Kistler at the University of Wisconsin, and Scott Foster at

Crystal River Engineering, who focused on headphone reproduction for the military and virtual-reality applications of the technology. Another pioneering venture was that of Bo Gehring of Focal Point 3D Audio. Both of these systems, used with head-position tracking, provided quite convincing 360° localizations. Several other processors now exist that can do this, and thanks to the MIT Media Lab, a set of HRTFs is available on the World Wide Web. Durand Begault documents this subject in detail in his recent book [9].

So, there it is. We have two ways to create binaural signals, dummy-head microphones and electronic synthesis, and two ways to reproduce them, headphones and crosstalk-canceled speakers.

The Nature of the Sweet Spot

In any system involving binaural image steering through loudspeakers, there is a sweet spot: the location where the 3-D sound "picture" is most sharply in focus. Systems that claim to have a broad sweet spot do so at the expense of localization

side to side should cause the soundstage to distort in an "elastic" fashion. Larger movements away from the axis of symmetry should result in a smooth degradation from a 3-D illusion to an illusion of fewer dimensions. At no time should the listener be aware of a "pulling" sensation or obvious phasiness from normal, small lateral head movements.

The concept of a sweet spot is not new to us; there has always been one for conventional stereo. That most stereo listeners ignore the sweet spot is a measure of the marginal reward for sitting there. In crosstalk-canceled speaker 3-D audio, the rewards are enormous if the technique is done well.

Speaker-Based Binaural Effects

There are a number of useful effects that can be achieved by means of binaural techniques applied to loudspeakers.

1. *Speaker Spreading.* In circumstances where the speakers are too close together to yield a realistic stereo soundstage, binaural synthesis makes it possible to replace the

real speakers with phantom speakers having an increased angular separation and apparent distance (Fig. 4). Done well, the effect is so convincing that little or no sound is perceived to come from the real speakers. The angular separation can be varied according to the listener's taste.

2. *Crosstalk Cancellation.* Used alone, acoustical crosstalk cancellation permits the left speaker to communicate with the listener's left ear and the right speaker

with the listener's right ear. In this sense the delivery system is not unlike headphones, but there is an important advantage: The sounds are perceived to be outside the listener's ears and in front of him.

Binaural (e.g., dummy-head) recordings can be played directly through such a system, and the result can be a remarkably convincing sense of three-dimensional space. Incidentally, not all binaural recordings are good. Differences among the artificial-head microphones, post-processing, and positioning of the head vis-à-vis the



Fig. 3—By digitally processing head-related transfer functions (HRTFs), it's possible to electronically synthesize the left- and right-ear signals appropriate for any direction.

precision; a "fuzzy" sweet spot has "fuzzy" localization. For some recordings or movies, that may be acceptable; for others it won't be. In general, listeners will find that they have considerable latitude in terms of front/back or vertical movement (the latter determined mainly by the speakers' vertical directivity). Systems will differ, however, in their tolerance of head rotation and of movement from side to side, off the axis of symmetry. Ideally, angular variations of $\pm 20^\circ$ or more should not dramatically change the illusion. Small movements from

Speaker-based binaural synthesis can create a phantom home theater in which all of the channels are identical

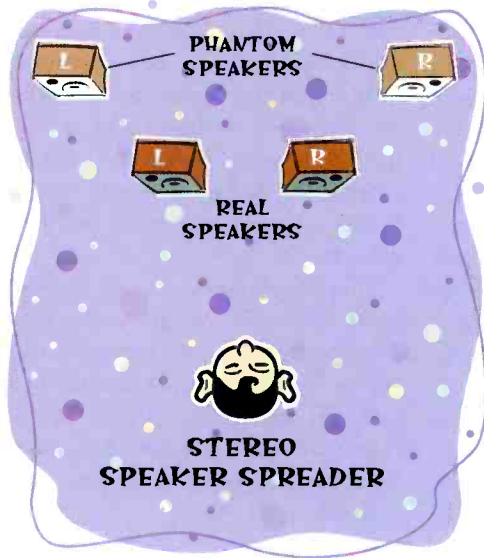


Fig. 4—When speakers are too close to yield a realistic soundstage, binaural synthesis permits replacing real speakers with phantom speakers having increased angular separation and apparent distance.

performers affect the relative quality of the few existing commercial examples.

Conventional stereophonic recordings also can be played through a crosstalk-cancellation system. Results will vary, depending on the microphone techniques and signal processing used in making the recording. My experience has been that a high percentage of recordings, especially popular ones, are enhanced in very interesting ways, with the stereo image sometimes expanding to fill the entire front hemisphere. Some recordings exhibit very dramatic and pleasant three-dimensional illusions, much more engaging than is possible with conventional stereo reproduction. Nowadays, a few recordings are pre-processed with 3-D effects. These may or may not be compatible with speaker-based binaural playback because of double processing and its unpredictability.

3. *Phantom Home Theater.* If we take the outputs from a surround processor, connect them to a five-axis binaural steering device, steer the channels to the appropriate locations around a listener (say, 30° left and right for the main channels, 0° for the center channel, and 90° left and right for the surround channels), and use signal conditioning to account for peculiarities of the headphones, then the listener can experi-

ence a multichannel simulation through headphones. All of the preceding provisos for headphone listening apply, so it may or may not be a very realistic experience. However, it is likely to be better than conventional stereo.

If we take the next step and create a crosstalk-canceled speaker version of the system, then the listener can have a multichannel experience from any source through just a single pair of speakers (Fig. 5).

With discrete multichannel digital formats like Dolby Digital (AC-3), all main channels (five, in the case of Dolby Digital) are full-bandwidth and separate. Thus, it is no longer possible to get away with lesser performance in any of the channels. Each of them can be expected to be used for a convincing directional effect. Speaker-based binaural synthesis can serve as a cost-saving alternative to an appropriate multispeaker system by creating a phantom multichannel system in which all channels are identical in sound quality and each can be addressed independently. Moreover, the listener can use more of his budget for two good speakers and a stereo amp rather than apportion it to many lesser components.

These synthesized multichannel techniques are not gimmicks; they are not adaptations of, or modifications to, two-channel stereo, Dolby Pro Logic, Dolby Digital, or any other multichannel system that is selected. Decoding is done *before* the image steering, using processing approved by the system's developer. All that is done is to synthesize phantom speakers to replace real ones. Even with these capabilities added, all of the native features of the base multichannel processors are still available. Usually, most of these are employed to enhance the spatial characteristics of two-channel stereo recordings. In the future, the "auralization" of listening spaces could become an accessory feature in such processors. We will be able to design our own "virtual" listening rooms.

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4. *Games and Interactive Entertainment.* The ability to binaurally steer specific sounds to specific locations can significantly enhance interactive games. Good guys and bad guys can be audibly tracked and chased. Full interactivity ensures that, as the player alters the visual perspective, sounds will track correspondingly to the correct locations. This has been demonstrated over headphones in various helmet-based virtual-reality games that have used a head-position tracking device to provide spatial interactivity. Speaker-based binaurally synthesized sound provides a parallel experience in computer workstations and similar situations.

Challenging Conventional Wisdom

Obviously, the quality of our auditory perceptions is dictated by the integrity of the sounds arriving at our ears. Conventional stereo and multichannel sound systems use several speakers to locate sounds and to energize the reflective sound field in rooms. The room is very much a part of the



Fig. 5—Speaker-based binaural synthesis can create multichannel sound reproduced through five phantom speakers but actually generated by just two real speakers.

Binaural synthesis can be achieved in a multichannel system with multiple channels are in sound quality.

sound reproduction system and, as such, represents a substantial uncontrolled variable in the critical final phase of the audio delivery system. The physical positioning of speakers and the acoustical treatment of listening rooms has become part of the personal art of audiophile stereo systems. In the end, they are all different. Close-up listening to small speakers (often called near-field listening) has become increasingly popular in professional recording as a means of reducing the influence of variable room characteristics prevailing at different studios. It gives engineers a better *absolute* reference for sound quality than the traditional large monitors that are subject to the variability of rooms. It is a trend that also fits nicely with the audio/video workstations that are becoming increasingly common in production and post-production tasks in film, television, multimedia, and computer games.

In multichannel surround sound systems, a persistent and common problem is the mismatch in the timbral signatures of the various speakers. Some of this may be caused by real differences between the speakers, but even if the speakers are identical, there will be differences attributable to their various positions in the room. With crosstalk-canceled speaker systems, all of the sound comes from two speakers; by definition, therefore, the phantom speakers in virtual home theater systems differ in timbre only by virtue of the differences in the HRTFs associated with their different locations. In other words, it is like listening to five perfectly matched speakers in a perfect room.

A further attribute of this form of listening is a remarkable sense of distance and depth. With the crosstalk canceled, the listener has no information by which to judge the distance of the real sources of sound—the speakers. Impressions of distance, then, are derived exclusively from cues in the recordings. It is captivating to see speakers but not to “hear” them, to be aware only of sounds occupying positions or areas in a

perceptual space that extends far beyond the walls of the room.

So let us adjust our mindsets slightly. Let us not think of small speakers in close listening situations as poor substitutes for the traditional professional and hi-fi products. Let us view them as legitimate alternatives, which in some important ways have the potential of being even better.

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Convincingly good 3-D audio requires that there be a well-defined acoustical link from each of the speakers to each of the listener’s ears. It is naive to think that any pair of speakers stuffed into any convenient location will work. Disappointments will abound. Fortunately, with attention to the right details, it is not difficult to achieve success.

First, the loudspeakers must be closely matched in performance and the electrical signal paths balanced.

Second, the listeners must be in a predominantly direct sound field. Sounds reflected from nearby objects or surfaces—walls, tables, or the workstation (monitor, computer, keyboard, printer, and the like)—will corrupt the illusion. Controlling the directivity of the speakers to avoid reflections is a further benefit. In the latter case, controlling horizontal as well as vertical directivity would be advantageous.

Third, the left and right acoustical signal paths must be the same length. The listener must be close to the axis of symmetry of the speakers, equidistant from both. Because of the position of the user’s chair, the computer workstation environment lends itself to this type of system. However, with appropriate attention given to the design of speakers and to the listening environment, it is possible to provide excellent experiences at much greater distances.

In all instances, it is assumed that the listener has normal hearing in both ears. If this is not the case, the system breaks down. It is also assumed that the listener’s head and ears have acoustical properties similar to those embodied in the HRTFs used for the binaural steering and crosstalk cancellation. While there are powerful features that all people have in common, there are certain to be instances in which different people hear slightly different effects from these systems. No one listener, therefore, can be the arbiter of absolute quality. But experience does show that it is possible to design a system that can provide remarkably convincing performances for most listeners.

So, there it is—my version of where we are and where we might be going. I have attempted to distinguish between those systems that are social, in that they allow for multiple listeners, and those that are designed to satisfy only a single listener. There are clearly times and places for both types. Technologies now exist that can give us a choice, and certainly more will come.

I find the whole trend very exciting, because at last we have broken the two-channel stereo stalemate. We knew long ago that there were better ways. As a stopgap (a 40-year one!), stereo has been very enjoyable. It is time to move on, though. Are you ready? A

D O R I A N R E C O R D



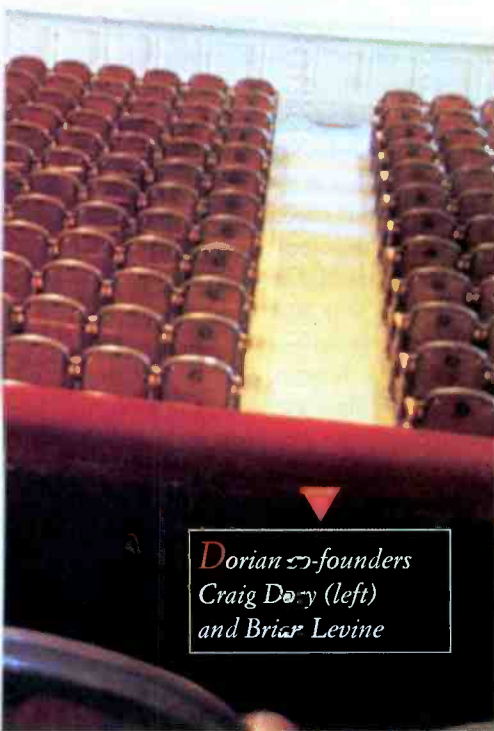
Photograph: Times Union/Skip Dickstern



▼
by David Lander

TROY, NEW YORK—IT'S INAUGURATION DAY. PRESIDENT CLINTON HAS ADVOCATED HARMONY, AND KEN KOLODNER, ROBIN BULLOCK, AND LAURA RISK OBLIGE HIM JOYOUSLY. KOLODNER IS A DULCIMER VIRTUOSO AND,

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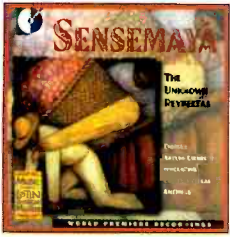


Dorian founders
Craig Dory (left)
and Briar Levine

ACCOMPANIED BY BULLOCK ON GUITAR AND RISK ON FIDDLE, HE'S PLAYING IN THE TROY SAVINGS BANK MUSIC HALL, A THEATER THAT WAS BUILT DURING ULYSSES S. GRANT'S ADMINISTRATION.

THE MUSIC HALL WAS A GRATEFUL BANK'S GIFT TO THE COMMUNITY, AND A VERY LAVISH GIFT AT THAT; IT COST

d o r i a n



DORIAN HAS
ALWAYS MAINTAINED
THAT ITS
ARTISTS PROVIDE
PERFORMANCES
THAT CAN'T BE
FOUND IN EVERY
RECORD-SHOP BIN.



\$435,000 to build. Its seats are empty tonight, but the performers have a captive audience. Closeted in a balcony-level control room, Brian Levine, David Walters, Doug Brown, and I listen through monitors to music being played and recorded for a future Dorian CD.

Levine is one of two Dorian principals. In 1988, he and Craig Dory set up shop in Troy to take advantage of a hall so acoustically sweet that conductor George Szell vowed he'd stand in front of it with arms outstretched if it were ever slated for demolition. Walters, the producer of this recording, is an Indiana-bred classical pianist who came to Dorian from the Tonmeister program (which combines music and music production) at Berlin's prestigious Hochschule für Musik. Brown, a bass trombonist with experience playing in orchestras here and abroad, is temporarily sitting in as engineer for Dory, who is out sick.

All four of Dorian's producer/engineers are seasoned musicians who, like members of a submarine crew, can fill in for one another. At just past 18:00 hours on this session's second day, Walters and Brown navigate the sound waves with palpable skill. Seated behind a folding table, they gaze dead ahead at a pair of Waveform monitor speakers mounted on cinder blocks, and Brown occasionally grabs a nearby pair of Stax electrostatic headphones. Their ears tell them all they have to know about the performers, who are out of sight; they detect off-pitch notes as readily as sounds that bloom unpleasantly.

After a year and a half of law school, Brian Levine just couldn't see himself in that profession, so he signed on as a research associate with a Canadian government agency. Nearly two years later, he entered the nonprofit sector. While moonlighting in the classical music field and managing the organist Jean Guillou, Levine met Craig Dory. It was Dory who led him to the Troy Savings Bank Music Hall.

A colleague who accompanied them on that 1986 visit was able to play the resident piano, a Steinway D. Though the instrument, then about 30 years old, was only "in reasonable shape," hearing it was enough to stun Levine, who immediately understood that "something really, really remarkable was going on acoustically. My mouth dropped open," he recalls. "It was an astonishing experience." He also marveled that this lovely old concert

hall was "hidden away" in a town he hadn't so much as heard of until shortly before his trip.

At its April 1875 premiere performance, the Troy Savings Bank Music Hall was somewhat more grand than it is today. The frescos that adorned the 60-foot-high ceiling are gone, as is the magnificent chandelier that boasted 14,000 hand-cut French prisms. (Initially, they reflected light from 260 gas burners, but Troy's fire marshal ordered the last of the hall's gaslights removed after a dressing-room lamp ignited a ballerina's headdress in 1928.)

A century ago, the Music Hall could have been compared to a princess. Now a dowager, she retains many of her original details: Multistory stained-glass windows continue to gaze down on the lobby, and an ornate iron staircase climbing to the balcony level reminds visitors that Troy was once a leading manufacturer of cast iron. The auditorium's seats also are framed in old iron and, over horsehair padding, wear their original leather upholstery. The seats provide minimal comfort, but the bank, which still owns the facility perched atop its downtown headquarters, is reluctant to make changes that might impair the hall's vaunted acoustics.

Just how good are those acoustics? Consider the opinion of Harold Schonberg, who for many years covered classical music for *The New York Times*: "It was a startling experience, being exposed to such raw, detailed yet colorful power," he wrote after hearing an orchestra perform at the Music Hall in 1971. "Only Boston's Symphony Hall, in this country, begins to match this kind of acoustic response."

After Dorian was established, Dory, its chief engineer, relocated to Troy from New Jersey while Levine, who oversees artists and repertory, remained in his native Toronto. About six times a year, Levine takes a nine-hour train trip to Troy, where he usually stays for about two weeks. A life-long big-city resident, he never learned to drive, which can make these visits even more taxing. Nonetheless, he feels the acoustic superiority of the Music Hall justifies the bother, only in part because it improves the sound quality of the CDs the company records there.

In fact, the hall also affects performance, "invariably in a very positive way," Levine maintains. Since Dorian's artists are involved in acoustic mu-

sic, he explains, "They spend a good deal of their lives fighting sub-standard environments. They learn to protect themselves by holding back in some ways. Basically, they're not free." As an example of the aesthetic limitations imposed by venues whose acoustics are poor, Levine cites musicians' fear of playing pianissimo passages as expressively as they might. They know, he relates, that some performance spaces would render the sound inaudible in the rear seats.

The Troy Savings Bank Music Hall, however, is known for projecting sound, a quality that has been demonstrated by dropping a pin on the stage for visitors, who can hear it 125 feet away, from the balcony. At most volume levels, tones are warm, rich, and full while remaining startlingly clear. That "really unleashes every bit of creativity. It unlocks the ability of artists to do exactly what they want," Levine remarks.

Dorian has recorded about two-thirds of its own 150 productions in the Music Hall. (The Discovery label is attached to another 50 or so titles in the company's catalog; these are produced by others.) Even after working in numerous venues in a half dozen countries, Levine continues to find this hall "the most versatile for smaller ensembles and, overall, the most pleasing." Its acoustics "allow you the flexibility to create the sonic signature that's appropriate," he says, noting it's possible to create "the apparent effect" of a salon by treating the larger space with damping material. Dorian is actually able to tailor the hall for a wide range of acoustic effects.

Dorian's control room at the Music Hall measures about 12 x 15 feet and may once have been a storage facility. Old paint (an indeterminate shade of green) is, in part, covered by large patches of acoustical damping material. The only illumination is a bare bulb dangling from the ceiling. This rooming-house ambience camouflages an elaborately rebuilt floor, constructed in several layers to resist vibration, and it contrasts starkly with the cutting-edge equipment Dorian favors. In one corner, a device custom-built by Wadia converts photonic digital signals that stream in through fiber-optic cable to the AES/EBU electrical format for recording. (Dorian was employing fiber-optic technology as far back as 1989; Dory says the cable can carry digital signals for "kilometers" without compromising their integrity.)

Three storage devices are in use at recording sessions. A Macintosh computer running Sonic Studio software by Sonic Solutions is connected to an external 9-gigabyte Seagate SCSI hard drive for storing sound files. Primarily



D O R I A N
R E C O R D I N G S



*Laura Risk on
the fiddle and
Ken Kolodner on
hammered dulcimer.*

*Craig Dory,
president and
chief engineer, at
the controls.*



Photographs: Courtesy of The Dorian Group, Ltd./Brian Levine

for noise-control reasons, this is housed in a separate room, along with the CPU, an Exabyte tape drive for archiving, and an additional 9-gigabyte drive. The Wadia also feeds the control-room playback system, a Sony DAT recorder, and one of Dorian's two Nagra-D digital tape recorders. (Dorian was the first record company in the world to own a Nagra-D.)

In the auditorium, a pair of microphones—Dorian always works with omnidirectional mikes—stands close to mike pre-amps and a custom high-resolution A/D converter that has been modified at least five times. Digital conversion is done in the hall to keep analog cable runs as short as possible, thereby avoiding time-domain propagation error and eliminating electro-

magnetic interference (EMI) and radio-frequency interference (RFI). There are also regulated power supplies, isolated in a heavy wooden enclosure so they can't be heard.

A continuing search for repertory that, in Levine's words, "is not overly recorded, is really distinctive, and fills important gaps in an appealing way" leads Dorian to a variety of places. The Southern Hemisphere became one of them after conductor Eduardo Mata helped inspire a series called Music of Latin American Masters. In November 1992, the company began recording Venezuela's Simón Bolívar Symphony Orchestra under Mata. That project was the first in what has since grown to more than a dozen titles showcasing Latin American composers and per-

formers. Dorian initially committed to a five-year plan, which is about to conclude, but even though Mata died in a 1995 plane crash, the series will continue. "One thing about this endeavor of finding interesting and unique repertoire is that you simply don't appreciate how rich the music bank is until you begin to poke around in it," Levine explains. "I had no idea how vast the Latin American repertoire is. There have been dozens and dozens of composers who most people are completely unfamiliar with, and many of them wrote simply fantastic music."

Music of the present day represents a growing interest for Dorian. Many young, talented composers are discovering that "it's important for them to connect with an audience," Levine notes, adding, "I think we're finally passing the 'Who cares if you listen' stage." (The

D O R I A N R E C O R D I N G S



HOW TO HEAR THE TROY SAVINGS BANK MUSIC HALL

Between mid-September and mid-June, some 60 concerts are held at the Troy Savings Bank Music Hall, which is at the intersection of Second and State Streets in the city's downtown district. (The box office is at 7 State Street, nearer the corner of First Street.) The Troy Chromatics, a century-old organization that first used the Music Hall in 1902, continues to bring world-renowned classical artists to the facility and now sponsors four or five concerts a year. There's also a series with top-ranked jazz performers, an acoustic folk music series, and 10 free Music at Noon concerts, held on the second Tuesday of the month and featuring regional performers. The Albany

Symphony and other musicians from the area near New York State's capital appear in the hall as well. For a schedule of events, call 518/273-0038.

D.L.



Dorian

quote, from composer Milton Babbitt, represents an attitude to which some avant-garde figures have subscribed, possibly as a defense.) A new release, which Levine says reflects an important facet of Dorian's future, features the Mexican-based percussion ensemble Tambuco performing contemporary compositions by Japan's Minoru Miki, Britain's Graham Fitkin, Eugenio Toussaint of Mexico, and others.

Dorian has always maintained that its artists provide performances that can't be found in every record-shop bin. As an example, Levine cites the Baltimore Consort, one of the company's best-selling groups. Contemporary classical composition, jazz, rock, and folk all play a part in the Consort's collective background, and Levine sees this as a key to the players' interpretations of "music that, in its own time, people would sing to, dance to, have fun to, get drunk to. They have really been able to enliven Renaissance music," he enthuses. "I think it's often performed in a way that's very academic."

The German violinist Ulrike-Anima Mathé is a classical musician who mines a different vein. Levine is quick to laud "her concept of sound production," remarking that it results in "a very Old World sound, the kind of sound you can associate with an older generation of European players who represent a golden age. That whole concept is different from the North American school, which is characterized by an edgy, penetrating sound designed to nail the back row of the audience." The latter approach is "hyperkinetic," while that of Mathé "is more relaxed, deeper, and more spiritual," Levine contends.

Last fall, Dorian began sponsoring a concert series, Dorian Live, in the Troy Savings Bank Music Hall. "We have world-class musicians doing fabulous things here," Levine states. "And then they're gone." Prior to the Dorian Live events, he notes, "no one in the community had a chance to share this." Not only do music lovers from the Troy/Albany/Schenectady region and beyond get in on the company's acts, but the concerts raise money for the Music Hall. Some concert segments have been broadcast on the popular public radio program "Performance Today," garnering attention for the artists, the hall, and the label. [For information on attending the Dorian Live series, see box on facing page.]

The Music Hall ran a deficit for many years but is now operating in the black, says Peter Lesser, managing director of the group that oversees operations. Because Dorian pays a fee for each of the 50 to 80 days it records in the hall each year, the company is an important contributor to the organization's coffers. Still, both Craig Dory and Brian Levine understand that filling seats is critical. "The hall is a live concert venue," Levine reasons. "If we can attract any part of our audience to it, perhaps they'll keep coming back."

Dory worked for AT&T Bell Laboratories after earning his bachelor's and master's degrees in mathematics. He's very much at home in the digital realm, and he speaks authoritatively on a number of other technological topics. Yet for many years, Dory was on his way to becoming a professional saxophonist: He won a statewide high school competition in Iowa and, while playing lead tenor sax in Iowa State University's top jazz band, won an international competition. As a graduate student, he played lead tenor in the University of Michigan Jazz Ensemble.

Very possibly because he was a serious musician before turning his talents to recording engineering, Dory's interpretation of the term high fidelity goes well beyond its traditional definition. His goal is to capture and preserve the signals that Dorian's artists generate within themselves—feelings and concepts that their instrumental or vocal talents help them externalize. "Musicians are musicians with or without their instruments," he asserts. "They're musicians internally. The instrument is simply a vehicle, a communication device.

"I'm trying to transcend the physics of sound, the physics of a particular instrument, the physics of recording," he continues. "I'm trying to get the best possible rendition of the music that's in an artist's soul. If we have to create new equipment to do that, we do."

Because Dorian is recording its Ken Kolodner project with just two microphones and without a recording console, repositioning a mike or a performer is the sole way to adjust balance. Earlier in the session, David Walters changed the angle of Kolodner's dulcimer. Walters also provided a small rectangle of carpet for Laura Risk, the fiddler, to stand on (it mutes her foot tapping) and asked that she aim the fiddle's neck at a



BRIAN LEVINE

BELIEVES THAT
THE MUSIC HALL'S
ACOUSTICS
CAN AFFECT
THE PERFORMANCE
AS WELL AS
THE SOUND.



d o r i a n



▼
CRAIG DORY'S

INTERPRETATION

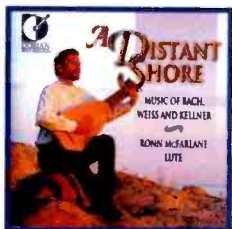
OF THE TERM

HIGH FIDELITY

GOES WELL BEYOND

ITS TRADITIONAL

DEFINITION.



particular point, a light to one side of her. Tape strips on the stage indicate Risk's ideal position, but she tends to shift around as she plays. When she moves, even a fraction of an inch, Walters and Doug Brown can hear the balance and the sound of her fiddle change.

At one point, Brown is bothered by the instrument's lower register and, over the talk-back system, asks Risk to "ease forward on the carpet about a boardwidth." She does so and plays a couple of test bars. Then Brown asks her to move back. "I have a really stupid question," he says after the next position shift and a few more notes. "What would happen if you split the difference?" Though demanding, both pro-

ducer and engineer are unfailingly delicate with the performers and invariably treat them with respect. Clearly, this is a key reason why returning Dorian artists tend to request the personnel they've worked with on previous projects.

On take 16, Brown hears "something murky that wasn't there yesterday." It might be an increase in humidity, he speculates, noting that this can raise the apparent level at the microphone by as much as 6 dB. (More moisture in the air means sound moves faster and reverberation increases.) After a short exchange, the production team decides that caution on the performers' part has triggered "a loss of energy." So, when the three stop playing, Walters advises them to take whatever critical comments he has made "with a grain of salt. Play with all the gusto you want," the producer urges. "I feel like I can use a little bit more freedom."

D O R I A N
R E C O R D I N G S



*In session with
Dorian Recordings:
Ken Kolodner on
hammered dulcimer,
Laura Risk on fiddle,
and Robin Bullock
on guitar.*

Kolodner responds affirmatively to this directive. "It's supposed to be fun," the dulcimer player's disembodied voice says over the monitors. Walters agrees. He prompts the artists to have fun, and he cues them with a new slate: "Take 17." Again, the three propel themselves into their music.

Brown listens intently and approves. "I like it," he says to his colleague. "I think the point you picked for the dulcimer makes all the difference." A



Photograph: Courtesy of The Dorian Group, Ltd./Brian Levine



Evolution: A gradual process in which something changes...



...into a different and more complex form.



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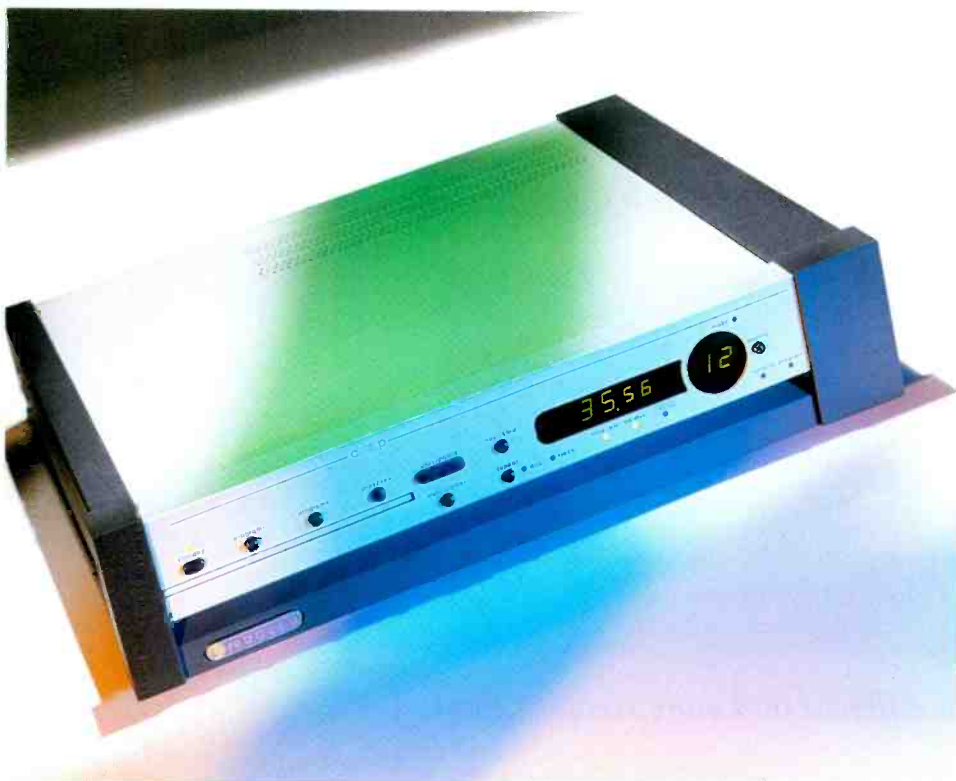


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DANIEL KUMIN

PROCEED CDP CD PLAYER



subtle, sculptural variety of textures. The net effect is something I suspect observers will either love or hate; I find it quite smashing despite the purple logo plate, which is perhaps a bit over the top.

Front-panel controls are well spaced and simple, with the usual transport and programming keys represented along with several LED indicators, including one to denote playback of HDCD-encoded discs, since the CDP incorporates HDCD decoding circuitry. There are also two good-sized LED displays, one oblong and one round. Panel graphics are nicely legible black on white, and, aside from their rigorously cummings-esque typography, are perfectly straightforward.

Disc timing data comes up in the oblong display, while the round window is reserved for track number; both are eminently readable. You can call up elapsed or remaining track or disc times from the front panel or the remote. The CDP's disc drawer is unique: a dramatically slim slab of aluminum barely $\frac{1}{8}$ -inch thick, machined with concentric depressions for 5- and 3-inch CDs. The drawer's effect while open is striking; when it's closed the hairline front edge contributes to the Proceed's very contemporary look.

On the back, the CDP's jack panel is somewhat unusual for a CD player. There are both RCA unbalanced and XLR balanced analog outputs, as well as a coaxial (RCA-jack) S/P DIF digital output, a grounded IEC power-cord receptacle, and a pair of $\frac{1}{8}$ -inch jacks, one an infrared-repeater input and the other a DC-trigger turn-on output. So far, not so singular—

but the CDP also supplies a pair of digital inputs, one coaxial and the other Toslink optical, which can be set to feed its internal D/A converter. Proceed's reasoning seems very sound: The CDP could contain the most accurate D/A converters

**THE CDP HAS
THE VERY UNUSUAL
ADDED VALUE
OF DIGITAL INPUTS
AND PREAMP UTILITY.**

of all the digital components in many systems, so why not make them available for use with laserdisc players, MiniDisc recorders, or other digital sources whose internal chips might hold less sonic potential? And because the CDP can be configured for



As a high-end audio brand, Proceed's pedigree is pretty close to unimpeachable. While its sister brand, Mark Levinson, cannot be said to have literally invented esoteric audio as we know it today, to many of us who cut our audio teeth in the 1970s, it almost seems so. Today, Mark Levinson is a division of Madrigal Audio Labs, as is Proceed; Madrigal in

turn resides among the extended audio family gathered under the wide-reaching umbrella of Harman International.

In essence, Proceed functions as Madrigal's "entry-level" brand, if a line whose least costly CD player, the \$3,500 CDP under scrutiny here, can be considered entry level. Yet the standards to which even this "junior" brand is held are immediately evident: The CDP is beautifully crafted, with a distinct industrial design that should prevent it from ever being confused with the latest flagships of any of the big brands. Exterior surfaces are all aluminum plates or extrusions, very nicely done up in gun-metal gray or milky brushed finishes with a

Dimensions: 17 $\frac{1}{4}$ in. W x 3 $\frac{7}{8}$ in. H x 12 $\frac{1}{8}$ in. D (43.8 cm x 9.8 cm x 30.8 cm).

Weight: 25 lbs. (11 kg).

Price: \$3,495.

Company Address: c/o Madrigal Audio Laboratories, P.O. Box 781, Middletown, Conn. 06457; 860/346-0896.

For literature, circle No. 90

variable-level output with remote-controlled volume, it can function as a very simple, digital-input-only preamp, not at all a bad concept for maximizing potential value.

Inside, the CDP is every bit as handsome as its exterior might suggest. (In fact, when not listening to the Proceed player, you could remove the top cover and hang it on the wall.) A single circuit board occupies the right-hand two-thirds of the case,



**INSIDE,
THE CDP IS EVERY BIT
AS HANDSOME
AS ITS EXTERIOR
MIGHT SUGGEST.**

which contains top-grade parts: a very substantial toroidal power transformer, extensively regulated and filtered power supplies, and some prominent LSIs, including the HDCD chip and a Motorola processor. The left-hand side is occupied by a ruggedized Philips CDM12 industrial CD-ROM transport mechanism.

The D/A converter and audio sections are laid out in fully dual-mono fashion, with a separate Analog Devices AD1864 dual-18-bit converter for each channel. Digital-domain processing and filtering are performed with 24-bit precision by the HDCD chip. The CDP is not an all-discrete circuit, the sort so popular with high-end designers; instead, its output stages include several high-grade audio ICs.

Proceed's documentation explains that the CDP maintains fully balanced design in both the digital and analog domains (and immediately balances the auxiliary digital inputs), to reduce noise and distortion throughout. An unconventional closed-loop design places the master reference

clock electrically just before the D/A circuits and slaves both the transport and the DACs to it, which is said to reduce jitter dramatically. Proceed also touts the stability of the CDP's fully digital servo systems, which it says will not require calibration, even after several years of use, to maintain optimum performance.

The supplied remote control is a workaday design—probably an off-the-shelf unit (it's marked "Made in Malaysia"). It has a number of useful features but is not really up to the level of the CDP itself in terms of ergonomics, design, or feel. Keys are quite cramped, and although Proceed has taken pains with button color and grouping, readability and "by-feel" learnability are less than wonderful. The remote has all the expected CD control and programming commands and adds a "Polarity" key that inverts the signal at the outputs. It also adds a rather unexpected group of controls: "Source," volume "Up" and "Down," and "Mute." These are for the CDP's aforementioned preamp functions. The two digital inputs are selected by keying the "Source" button once or twice; the player will revert to its own transport's signals if you re-key play or open or close the drawer. The volume and muting keys are normally inactive; to activate them for external sources and for the CDP's own playback, you first perform a customizing routine by holding down certain front-panel buttons. In addition to activating the level controls, you can select a volume-display mode, choose a muting level, and set the player to revert to standby mode after 5 to 60 minutes of inactivity. There's also a left/right balance routine accessible from the remote.

Rather unusually, the CDP contains not only an infrared receiver but an IR transmitter as well. This enables it to send out its full complement of commands (which is considerable) to a full-system

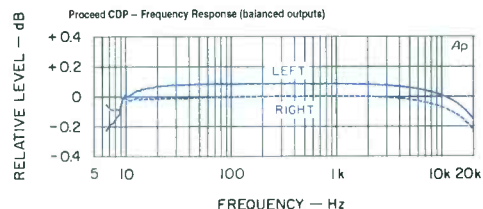


Fig. 1—Frequency response.

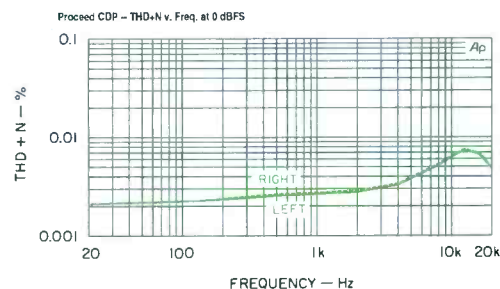


Fig. 2—THD + N vs. frequency at 0 dBFS.

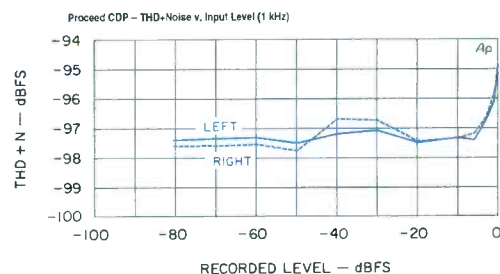


Fig. 3—THD + N vs. level at 1 kHz.

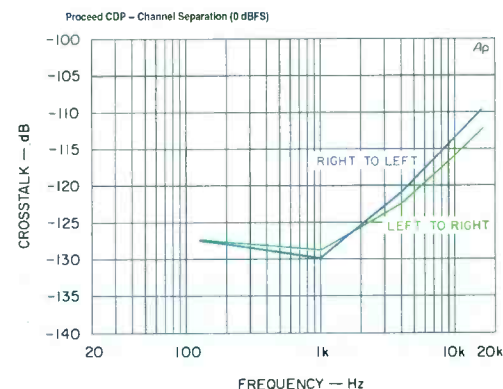


Fig. 4—Channel separation.

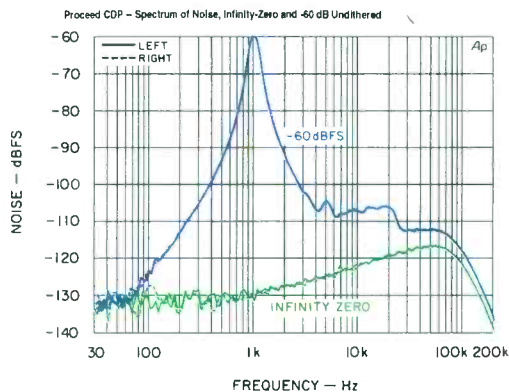


Fig. 5—Spectrum analyses for an “infinity-zero” signal and a 1-kHz tone at -60 dBFS.

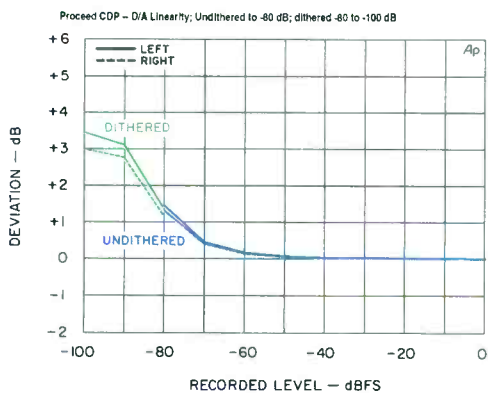


Fig. 6—Deviation from linearity at 1 kHz.

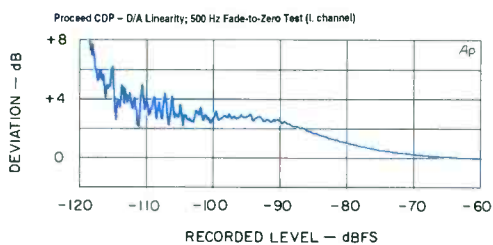


Fig. 7—Fade-to-noise test, dithered 500-Hz tone.



Besides XLR and RCA analog outputs, the CDP has digital outputs and inputs.

learning remote control, multi-room controller, or other media-controller device. The library of codes includes all the CDP's native operational commands, plus a number of what Proceed terms “positive” controls: commands that induce a particular response regardless of the CDP's current state, as opposed to “toggling” a particular mode. For example, the front-panel drawer button will open the drawer or close it, depending on current position, but the CDP also stores separate “positive” commands for each action as well as for power on, standby, external-source selection, play, pause, stop, and several other functions. The reason for providing such commands is to facilitate control of whole-house media systems, since when commanding a component from a remote room you don't necessarily know what state it is in (whether it is on or off, for example). These commands also make programming the “macro” keys found on many powerful, full-system learning remotes simple and useful; given my ambivalence toward the CDP's own remote, if I owned the Proceed I might well avail myself of one.

Measurements

Bench-testing the Proceed CDP was for the most part routine, in the best sense: Its performance was consistent, predictable, and almost uniformly superb. I made all tests using both the balanced and unbalanced outputs but will compare results only in the few cases where they diverged in some significant way.

Frequency response, shown in Fig. 1, is very flat and smooth, even on this expanded vertical scale, drooping barely 0.2 dB at 20 kHz and offering almost no visible evidence of filter ripple. Channel balance is almost spot-on at 0.1 dB, which is very good, but somewhat unexpectedly it was better from the unbalanced outputs, at less than

half this figure. The unbalanced RCA outputs produced identical overall response, and both sets of outputs supplied exceedingly low source impedances (22 ohms balanced, 14 ohms unbalanced), which will keep cables or input impedances from being much of a factor sonically.

Figure 2 displays total harmonic distortion plus noise (THD + N) versus frequency at 0 dBFS, and it is low indeed over the entire spectrum. Adding a 20-kHz “brick-wall” filter to the test loop reduced top-octave THD + N by about two-thirds (not shown), but it was already low enough that this hardly seemed significant.

Distortion at 1 kHz, measured as a function of signal level, is nearly as impressive (Fig. 3). The CDP reproduces very low-level signals with no observable penalty in noise

**THE PROCEED'S
BENCH PERFORMANCE
WAS CONSISTENT AND
ALMOST UNIFORMLY
SUPERB.**

or distortion, and its rendition of full-scale signals is equally satisfactory. Signal-to-noise ratio was also superb, with a slight (3-dB) advantage to the balanced outputs. Dynamic range, as measured by the EIAJ standard of exercising the D/A circuit with a -60 dBFS tone, was within a couple of dB of the very best I've seen.

Figure 4 shows channel separation (crosstalk) in both directions. Better than 110 dB at all frequencies between 100 Hz and 16 kHz, this is exceptionally good, as is the match between channels. The jury is out on whether or not this kind of separation really matters, but it's hard to argue with the level of care in board layout and component selection that it suggests.

Figure 5 shows two different plots of the CDP's noise spectrum (referred to full-scale output), one for an “infinity-zero” silent track and the other while reproducing a -60 dBFS 1-kHz tone. In both cases the consistency between channels is notable, as is the freedom from any discernible power-line harmonics (the blip at 5 kHz may be pollution in the test environment). The rolloff above 80 kHz, almost precisely

18 dB/octave, is welcome, as among other things it suppresses any possible contamination of the output by clock leakage.

Digital-to-analog conversion accuracy, represented by deviation from linearity at low levels, is depicted by two plots. Figure 6 actually combines two tests: undithered 1-kHz tones from 0 to -80 dBFS and dithered tones from -80 to -100 dBFS. The positive error evident over the latter range, though negligible in absolute terms, is greater than I might have expected given the CDP's excellent precision elsewhere. The same can be said for Fig. 7, the fade-to-noise test with a dithered 500-Hz tone (only one channel is shown, as the two were effectively identical). The same magnitude of error is evident, but here we can see that it shelves, maintaining a roughly 3-dB deviation until becoming "lost in the grass." This looks suggestively like some sort of 1-bit's-worth error in the push-pull DAC configuration, especially since it was consistent for both channels.

I cannot say that during my auditions (completed before any bench testing) I heard anything but superb low-level resolution and excellent pitched and ambient decays from the Proceed; both can be telltales of linearity errors. But then I've never claimed to be able to hear a few decibels worth of deviation some 90 dB down!

Use and Listening Tests

I'm not convinced of the necessity for balanced line connection in home hi-fi systems, but since push-pull operation is so central to the CDP's design I opted to preserve it straight through to the amplifier. I connected the Proceed player to two channels of a Cinepro 3000x6 power amp, a six-channel (at 350 watts each) bipolar solid-state design of exemplary performance, using the amp's XLR inputs and a pair of pro-quality, 12-foot microphone cables. The Cinepro drove B&W Matrix 803 Series 2 speakers.

Rather than using the CDP's volume control, I kept the player set to its fixed-level mode for most of my auditioning, on the theory that this would preserve the greatest signal purity. This required using the power amp's front-panel input attenuators as volume trims, a discipline to which I quickly grew accustomed, even finding that it tended to help focus my listening somewhat.

(I'm not saying I'd want to live this way permanently, though.)

I was quickly made aware that this stripped-down setup produced playback of a very high level. Sounds materialized from a perfectly "black," dead-silent background, and they seemed more than usually solid, present, and out in the room. The Proceed was entirely free of bass exaggeration or any extra warmth or punch, yet the combination yielded about the best-controlled, most-effortless bottom octaves I've heard the B&Ws deliver. At the same time, the Proceed sounded open, detailed, sharply defined, and transparent—but not particularly airy in any highlighted way. The CDP never sounded soft, however; in fact, if I had to characterize it at all I'd lean toward infinitesimally brighter, or clearer, rather than darker or warmer.

Piano recordings shone especially. A Sheffield Labs disc of Schubert pieces for four hands (Sheffield 10054-2-F), by the Piano Duo Schnabel, sounded dramatically present but not very "recorded" at all, in good measure because of its very homey, undramatic production. The CDP managed to etch transients without sounding cold or electronic, and the disc's very up-close piano resonance, hammer "tonk," and room sound were subtly portrayed.

I cannot lay claim to an extensive collection of HDCD-encoded discs, but I do have Reference Recordings' two samplers. These

**THE SOUND
WAS OPEN, DETAILED,
SHARPLY DEFINED,
AND TRANSPARENT.**

include several stunning tracks. The version of Miles Davis's "All Blues" from the first volume (Reference's RR-S3CD) played via the CDP was marvelously clear, lively, and subtly dynamic, with truly sit-up-and-notice drum sound, especially the cymbal rides. All of the pieces from the second sampler volume (Reference RR-905CD) were sonic standouts. The movement from the Janáček Sinfonietta demonstrated the CDP's ability with complex, dynamically demanding music and bigger-image re-

MEASURED DATA

Line Output Level, 0 dBFS: Balanced, 2.5 volts; unbalanced, 4.5 volts.
Line Output Impedance: Balanced, 22 ohms; unbalanced, 14 ohms.
Channel Balance: Balanced, ± 0.05 dB; unbalanced, ± 0.025 dB.
Frequency Response: +0.1, -0.2 dB, 10 Hz to 20 kHz.
Channel Separation: Greater than 102 dB, 125 Hz to 16 kHz.
THD + N at 0 dBFS: Less than 0.004%, 20 Hz to 20 kHz; 0.0015% at 1 kHz.
Maximum Linearity Error: Undithered recording, +1.4 dB at -80 dBFS; dithered recording, +3 dB at -100 dBFS.
A-Weighted S/N: Balanced, 113 dB; unbalanced, 110 dB.
Quantization Noise: -97.1 dBFS.
Dynamic Range: 99 dB, A-weighted.

cordings, though I found this track a shade bright-sounding for a hall recording.

Speaking of imaging, the CDP did not project the sort of highlighted stereo soundstage you sometimes hear from esoteric systems, but it did create a very believable image. The CDP produced a pleasant illusion of depth, mostly behind the speakers, and was exceptionally solid and stable in its placement of instruments and voices.

I also found an HDCD-encoded recording of a more commercial, if not exactly mainstream, genre: *Big Mama's Door* (OKeh BK-67593), by the remarkable young folk/blues-man Alvin Youngblood Hart. This disc sounded electrifyingly in-room—warm, lifelike, and intimately live. The net effect was eerily that of being transported to the San Antonio hotel room where Robert Johnson cut his most famous sides, but with better fidelity—if you can imagine a live-to-digital two-track session in Depression-era Texas.

How much of this sonic excellence was due to the Proceed's intrinsic goodness and how much to the HDCD system, I am not prepared to say. I don't have enough experience with HDCD players and discs, and in any event, the CDP sounded equally fine, or as nearly so as to call the matter into question, on numerous non-HDCD discs.

Continued on page 56

EDWARD M. LONG

N.E.A.R. 15M SPEAKER



Even in this era of big corporations, small enterprises populate the field of audio—especially the field of loudspeakers. New England Audio Resource (N.E.A.R.) is a good example of a small company driven by one man's desire to produce loudspeakers that are different from and—if possible—better than others in their price range. That man is William Kieltyka (pronounced Kel'-ta-ka), who started N.E.A.R. in 1988 after a six-year apprenticeship at Bozak, a company started by another man with a vision, Rudy Bozak. Once a major force in the loudspeaker business, Bozak made its own cones, including those used in its unique aluminum tweeters. Kieltyka bought Bozak's cone-making equipment and improved and refined this technology to a considerable extent. His desire was to produce high-tech loudspeakers at reasonable prices, and as you will see, I think he has succeeded admirably.

Besides home speakers, N.E.A.R. makes loudspeakers for use outdoors and has supplied systems to many theme parks and other facilities that require a weatherproof design with a low failure rate. Durability and weather resistance are among the advantages claimed for metal cones. A metal-cone driver in N.E.A.R.'s lab has been submerged in water for more than two years and still operates!

The N.E.A.R. 15M is a two-way system, using a 6½-inch woofer with an anodized aluminum-alloy cone and a 1½-inch tweeter with a titanium-alloy diaphragm. The enclosure is finished in a black ash laminate; its grille is a half-inch-thick frame covered with black cloth. The cabinet is of ¾-inch medium-density fiberboard except for the front panel, which is 1 inch thick. The interior is divided by a full-sized cross brace, which consists of a ¾-inch-thick panel having four windows that allow air to flow freely within the enclosure. A small

amount of Dacron batting within the enclosure helps absorb the sound radiated by the rear of the woofer cone.

Three TeknaSonic TF-10 Anti-Resonance Devices (ARDs) are mounted inside the enclosure, one on the top panel and one on each side panel. The ARDs are tuned to the panels' major resonance modes and absorb and dissipate the energy that the panels would otherwise radiate as delayed acoustical output.

The enclosure is vented through a tuning tube, 2 inches in diameter and 6¼ inches long, set into the rear. The input plate has two five-way binding posts that accept standard double-banana plugs and 16-gauge wire. The 15M's total weight—including the enclosure, the cross brace, the three ARDs, the crossover, and the drivers—is 24 pounds.

The 6½-inch woofer has an aluminum-alloy cone, a cast frame, and a large magnet with a vented back plate; a proprietary formulation of ferrofluid, which N.E.A.R. calls Magnetic Liquid Suspension (MLS), fills the gap around the 1½-inch-diameter voice coil. By using MLS, N.E.A.R. is able to build a woofer without the usual "spider" as a centering device, thereby eliminating a source of nonlinearity. The magnetic fluid not only centers the voice coil in the magnetic gap but helps dissipate heat from it as well; the metal cone and dust cap also help dissipate voice-coil heat. N.E.A.R. builds its own woofers, even spinning the aluminum to form the cone, but it sends the cones out to be anodized with a layer of aluminum oxide that stiffens their surfaces and makes them more rigid. Each woofer (and tweeter) is tested and then matched with an iden-

Rated Frequency Response: 42 Hz to 21 kHz, ±2 dB.

Rated Sensitivity: 88 dB at 1 meter, 2.83 V rms applied.

Rated Impedance: 8 ohms.

Rated Power Handling: 30 to 150 watts.

Dimensions: 15 in. H x 9½ in. W x 11¾ in. D (38.1 cm x 24.1 cm x 29.8 cm).

Weight: 24 lbs. (10.9 kg).

Price: \$799 per pair.

Company Address: 12 Foss Rd., Lewiston, Maine 04240; 207/795-0609.

For literature, circle No. 91

tical driver, and the 15Ms are built as matched pairs.

Although the 15M's tweeter looks a little like an inverted dome, it isn't: A flat rim (not clearly seen in the detail photo on the next page) surrounds the tweeter's concave center and attaches to a 1/4-inch rubber annulus. The 1 1/8-inch diaphragm is fabricated from a lightweight titanium alloy, and the voice coil is 3/4 inch in diameter.

The crossover is a modified third-order design built from three inductors, three capacitors, and two resistors that all appear to be of very good quality. I measured the acoustical crossover frequency as 2,710 Hz, which is amazingly close to the 2,700 Hz specified by N.E.A.R.

The instruction manual contains information on unpacking the 15Ms, connecting them to your amplifier or receiver, and placing them properly in your room. The manual recommends that you use up to 150 watts per channel to get the best from these

**THE N.E.A.R. 15M'S
FREQUENCY RESPONSE
WAS VERY UNIFORM
AND VERY SMOOTH
AT CROSSOVER.**

speakers. While you might rightly think that too much power could damage the 15Ms, N.E.A.R. cautions that damage can also be inflicted by the distortion that occurs when low-powered amplifiers clip.

Measurements

Before I performed my technical measurements, I listened to the N.E.A.R. 15Ms to make sure that there was nothing obviously wrong with them. I was surprised at how good they were, considering that they cost only \$799 a pair.

Frequency response, with the microphone 1 meter away from the 15M at a point between its woofer and tweeter, is shown in Fig. 1. The acoustic output is very uniform, within ± 3 dB from 60 Hz to 18 kHz and ± 1 dB in the important range from 200 Hz to 5 kHz. The drivers' outputs are each 6 dB down at crossover (2,710 Hz) and combine to produce smooth response through the crossover range. (The tweeter's

output did not keep rising past the end of the graph but began rolling off at 20 kHz.)

The phase responses (Fig. 2) indicate that the drivers' outputs match within 2.1° at 2,710 Hz. This verifies that they add together, as they should, to produce 6 dB greater level than either driver does separately at that point.

The 15M should be an easy load for any amplifier, as the impedance curve (Fig. 3) indicates. The impedance drops only to about 6 ohms at 40.9 and 160 Hz, which is very reasonable.

For Fig. 4, I measured output and second- and third-harmonic distortion with the microphone and the speaker on the ground; such ground-plane measurements yield a 6-dB higher output than free-field measurements, like those in Fig. 1. They also smooth low-frequency response by eliminating cancellation-producing reflections, which makes it easier to compare the reference output with the distortion curves and represents a speaker's bass response more accurately.

I tested the 15M's output and distortion at sound pressure levels of 90 and 100 dB. I kept the speaker's grille off for all of these tests except for output at 90 dB, which I measured with and without the grille. At 100 dB SPL, the highest second harmonic is 7% (at 100 Hz); the third harmonic reaches a maximum of only 5% (at 40 Hz) and is a minuscule 0.8% at 1.8 kHz. At 90 dB SPL, the second harmonic is at its highest, 4.5%, at 80 Hz and is just 0.6% at 1.8 kHz. I consider these output levels to be more than reasonable for most listening, especially if you want to avoid overloading your ears to the point where the sound distorts or you suffer hearing loss. Because the grille had a very slight effect, I left it on for other measurements and throughout all of the listening evaluations.

Figure 5 shows on- and off-axis responses with the speaker upright and with it hor-

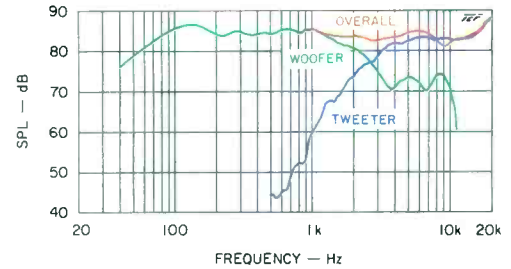


Fig. 1—Frequency response.

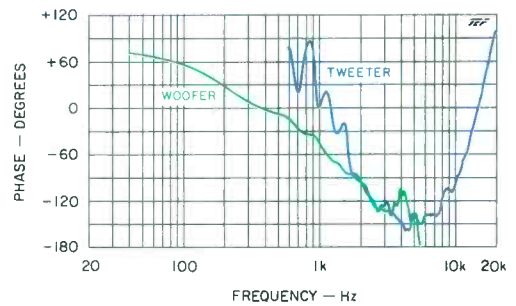


Fig. 2—Phase response.

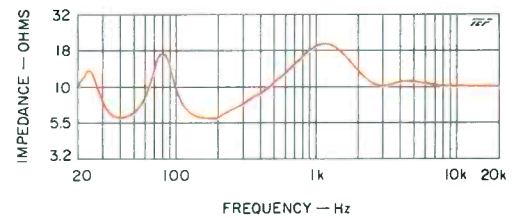


Fig. 3—Impedance magnitude.

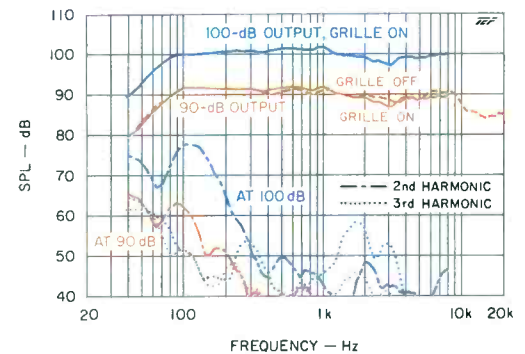


Fig. 4—Ground-plane frequency response, and second and third harmonics, for output levels of 90 and 100 dB.

izontal. These curves indicate that it's best to set the 15Ms upright, with the drivers one above the other. If you place the 15Ms on their sides, as you might do to fit them

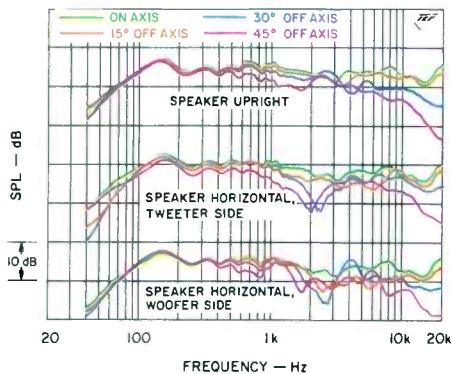


Fig. 5—On- and off-axis responses.

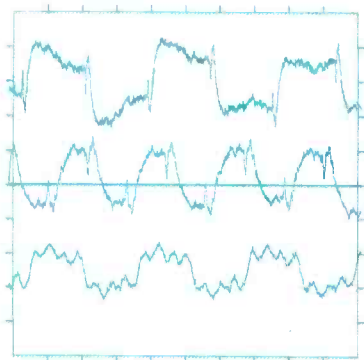


Fig. 6—Square-wave response at 300 Hz (top), 1 kHz (middle), and 3.3 kHz (bottom).

on a bookshelf, you're probably better off listening with the woofers on the inside (bottom set of curves) rather than with the tweeters to the inside (middle curves). However, every listening environment is different, so I suggest you try the 15M each way.

The 15M's square-wave responses at 300 Hz, 1 kHz, and 3.3 kHz (Fig. 6) are typical of its performance across the most important range of frequencies. The fundamental frequency and its harmonics must be in exactly the right amplitude and phase relationship for a speaker to reproduce a square wave perfectly. The 15M comes very close to this ideal with a 300-Hz square wave (top), and I would expect it to have above-average performance in the midrange, especially on voices. The 3.3-kHz square wave (bottom) shows that the tweeter has both the phase integrity and the extended response (also seen in Fig. 1) necessary to reproduce the waveform accurately. At 1 kHz (middle), the relationship of the fundamental and its harmonics is not as good as it might be; considering that these frequen-

cies lie above and below the 2,710-Hz crossover, however, this is still good performance. On square-wave tests, some speakers' outputs shift back and forth between square and triangle waves through the crossover range, but the 15M's square waves remain pretty consistent.

I measured the time offset between the 15M's drivers and found that the tweeter's output, at its higher frequencies, arrived 120 microseconds before the woofer's. This delay can be seen in the energy/time responses (Fig. 7). The woofer's output—which would not normally show up very well in a single, full-range energy/time curve (because the test signal is weighted toward the high frequencies)—has been raised 10 dB for clarity.

The 15M's 20-kHz cosine-pulse output (Fig. 8) is reasonably good but reveals, as does Fig. 2, that the speaker's overall phase response is not linear. You can also see the slight time offset between the woofer and tweeter and that the 15M is very well damped.

I made low-frequency near-field measurements of the woofer's output, the port's output, and both together. The speaker was tuned to 37.8 Hz, and the port's output was spread over a wider frequency range than usual. Together, the woofer and port delivered their maximum output between 80 and 150 Hz.

Accelerometer measurements of the 15M's enclosure in the range from 200 Hz to 1 kHz showed very little vibration and no major peaks. I did see minor peaks at 276 and 450 Hz, but even these were within 5 dB of the overall vibration level.

Use and Listening Tests

To augment my own listening, I use a panel to audition audio equipment that I review. The panel members listen one at a time, but all hear the same musical selections. The speaker used by the panel as a reference comparison is a custom-designed system about 60% larger than the 15M. Its on-

A coating conceals the fact that the woofer, like the tweeter, has a metal diaphragm.



axis frequency response is uniform, within ± 3 dB, from 32 Hz to 10 kHz; it has a slightly rising top end to 18 kHz, above which its response slopes gently down until its 24-kHz output equals its output at 1 kHz. The time offset between its drivers is within ± 25 microseconds from 200 Hz to 12 kHz.

The panel's comments about the 15Ms' sound on Valse, from *The Red Poppy* ballet suite by Reinhold Glière (Delos DE 3178), were: "light and airy," "individual instru-

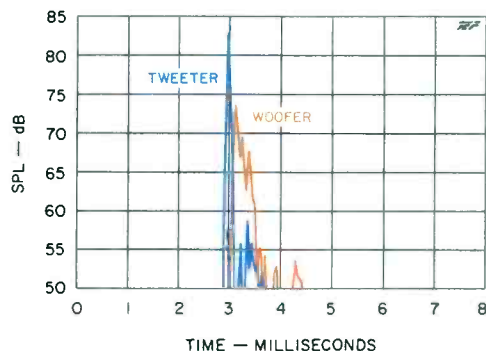


Fig. 7—Energy-time responses. Woofer response has been raised 10 dB for clarity.

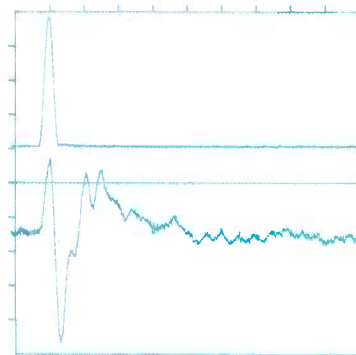


Fig. 8—Response to a 20-kHz cosine pulse; input (top) and output (bottom).

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ARES 8



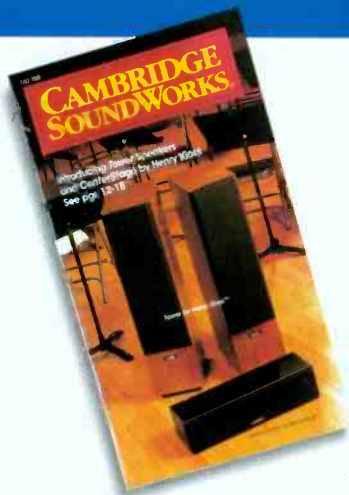
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ments clear and distinct,” and “good center images.” The panelists felt the reference system was “less bright,” with “instruments. . . more recessed,” but also “more spacious” and with “more expansive sound.” When listening through the N.E.A.R. speakers to Aaron Copland’s Concerto for Piano and Orchestra (with pianist Earl Wild and the Symphony of the Air, Vanguard Classics SVC 3), the comments were: “piano very clear and sharp,” “piano very detailed,” “brass and piano slightly brighter,” and “a little more hall reverberation.” The reference speakers were “very clear and detailed” and “very sonorous.”

For “Stormy Weather,” sung by Eileen Farrell on the *Test & Burn-In CD* (XLO/Reference Recordings RX1000), the panel’s comments on the 15Ms were: “singer more precisely centered,” “voice is slightly more veiled,” “brushes on drums slightly smeared,” and “less deep bass than the reference.” On another track of the same disc, “Prof.’ Johnson Does Something Spatial,” Keith Johnson walks around a recording venue while speaking and striking a wood block and then a cymbal. Through the 15Ms, the listening panel felt his voice was “clear, even at a distance,” “slightly nasal when in the center,” “slightly veiled but distinct,” and “more forward, with good articulation.” Other comments were: “The wood block has a little more echo” and “cymbal has less body.” “Lime-light,” on Alan Parsons’ and Stephen Court’s *Sound Check* (Mobile Fidelity Sound Lab SPCD 015), elicited the following comments about the N.E.A.R. speakers: “clear and precise sound,” “voice brighter and more forward,” “slightly edgier on voice,” “percussion has less attack,” and “bass good but not as deep.” Later, while watching video, some of us noted that actors’ voices were clear and articulate, even when picked up at a distance and with lots of room reverberation.

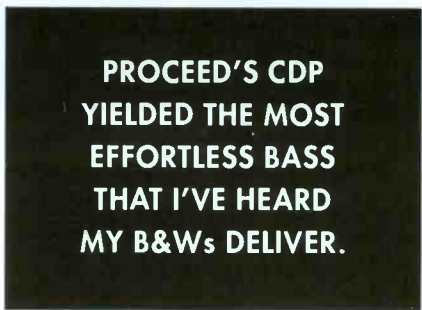
As with any loudspeaker, you should listen to the N.E.A.R. 15M with music that’s familiar to you. If you will be using the speaker for home theater as well, I suggest that you listen to it with a spoken voice source, such as the track of the *Test and Burn-In CD* that I used. But for music or video, the 15M is clearly an outstanding speaker, at a price where I don’t think it has much competition. A

PROCEED, continued from page 51

Regarding more mundane issues, I have little out of the ordinary to report. The player worked silently and exceptionally smoothly. It has a two-speed drawer mechanism that slows down as it closes—very slick—although it takes its time to load and cue a disc (about 7 seconds). The CDP’s ultra-elegant disc drawer is also quite sharp-cornered; even though its edges are slightly eased, you can still give yourself a scratch if you accidentally drag the back of your hand across a corner.

The passage of time did not engender any warmer feelings toward the CDP’s remote control. Its graphics are somewhat confusing, its lettering doesn’t provide enough contrast for good readability, and its placement of the fundamental transport keys, crammed together at the top edge, was unfortunate—to my fingers anyway. Oh, well; this is what programmable master remotes are made for.

The CDP proved very regular and reliable, with only a couple of hiccups over a



two-week period. First, when fast-searching through a disc, the player would occasionally jump ahead 10 seconds or so from the expected release point. Second, walking across the carpet, touching the player, and discharging a bolt of static occasionally induced an audible “tick” over the outputs, and once it caused the CDP to go all aphasic and revert to stop mode; re-keying play returned everything to normal.

All in all, the Proceed CDP is an exceptionally fine CD player—one of the two or three best-sounding (and handsomest) I’ve used. Its price is steep, but no more so than that of many another high-end design. And the Proceed has the very unusual added value of digital inputs and preamp utility. Certainly those in search of a top-flight CD player and D/A converter with heirloom-quality materials and construction owe it a serious audition. A

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The X-DAC's brushed-aluminum front panel is about $\frac{3}{8}$ inch thick. Seven LEDs in-

dicate operating modes: A green LED denotes signal lock, red LEDs are used for the three standard sampling frequencies (48, 44.1, and 32 kHz), yellow LEDs identify pre-emphasized and HDCD-encoded sources, and a red one indicates power on/off.

Dimensions: 4 $\frac{3}{8}$ in. W x 4 $\frac{3}{8}$ in. H x 8 $\frac{3}{4}$ in. D (11 cm x 11 cm x 22 cm).

Weight: 2.9 lbs. (1.3 kg).

Price: \$595.

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On the X-DAC's opposite end are two digital inputs (one coaxial and the other Toslink optical), two pairs of gold-plated RCA analog audio outputs, and a female connector that accepts 12-volt, 500-milliampere AC power from the separate "wall-wart" power supply.

Measurements

The X-DAC's output voltage at digital full scale (0 dBFS) was 2.195 volts for the left channel and 2.206 volts for the right. Surprisingly, these voltages did not drop at all when I switched from instrument to IHF loading. That's because the output impedance turned out to be considerably less than



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1 ohm! Moreover, distortion at these full-scale output levels did not increase at any audio frequency when I switched from high-impedance to 100-ohm loads. Very impressive!

Frequency response in the normal mode, i.e., without de-emphasis, is plotted in Fig. 1. With de-emphasis switched in, the response was virtually the same, suggesting that de-emphasis error was essentially zero.

Square-wave response was typical of linear-phase circuits, with symmetrical ringing about the vertical center line of each half cycle. Further, at full scale, the peaks of the ringing were not clipped off as they are by the commonly used NPC digital filters. The X-DAC did not invert signal polarity.

Total harmonic distortion plus noise (THD + N) at digital full scale is shown in

Photos: Michael Crocetti

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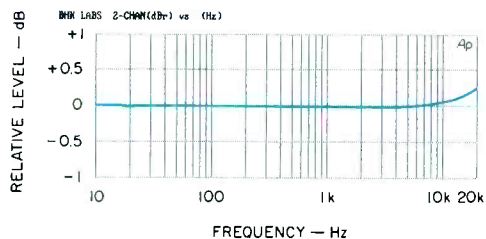


Fig. 1—Frequency response.

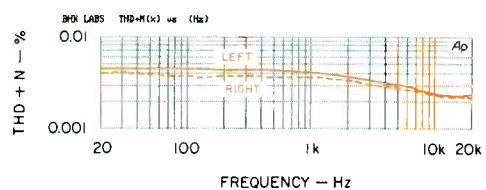


Fig. 2—THD + N vs. frequency.

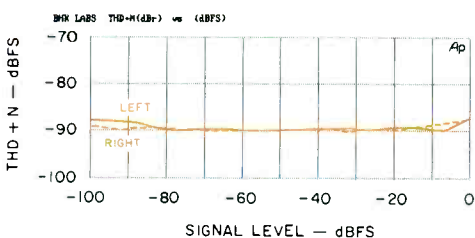


Fig. 3—THD + N vs. signal level.

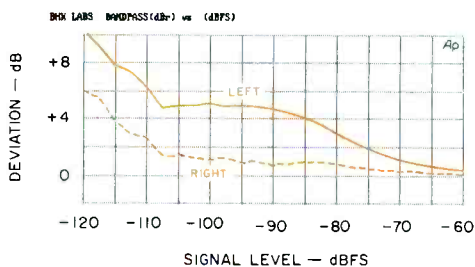


Fig. 4—Deviation from linearity.

Fig. 2; Fig. 3 displays THD + N of a 1-kHz tone as a function of digital signal level. The X-DAC's overall noise and distortion performance is good but not state of the art. But then, the X-DAC doesn't have a state-of-the-art price, either.

Deviation from perfect linearity is plotted in Fig. 4 for signal levels ranging from -60 to -120 dBFS. In the sample I tested, the left channel is not as good as the right

channel. In the noise spectra (Fig. 5), the 1-kHz peak, which should be at exactly -80 dBFS (the level of the input signal), is a bit higher than that in both channels. The right channel is only a bit high, but the left channel is noticeably higher, has more significant harmonics, and has a bit more hum. In the noise-modulation test devised by Richard Cabot of Audio Precision (Fig. 6), the spectrum of the output noise from 300 Hz to 20 kHz in a 1/3-octave bandwidth is plotted as a function of a 41-Hz excitation signal for levels of -60, -70, -80, -90, and -100 dBFS. If low-level linearity is good, each of these spectral plots will overlaid. In the left channel (Fig. 6A), the amount of noise above 1 kHz does vary with signal level, which is what the test is designed to show. (The bumps below 1 kHz in the

CIRCUIT HIGHLIGHTS

The X-DAC's digital input circuit feeds the output from the Toslink optical receiver to the S/P DIF coax connector's hot terminal through an isolating resistor. This is a simple and effective way to provide both input types without a switch, though it also means that only one of these inputs can be connected to a source at a time. A 74HC04 logic gate circuit squares up the selected input and moves the signal to the input of a Yamaha YM3623B digital receiver.

The recovered clock and data signals are passed into a Pacific Microsonics PMD100 digital filter and HDCD decoder. The eight-times-oversampled outputs from the PMD100 are connected to a Burr-Brown PCM69AP, a dual 18-bit DAC chip. The latter's novel architecture,

which combines a 10-bit and a 1-bit DAC, is said to achieve high resolution, minimal glitches, and low zero-crossing distortion.

Two dual JRC 5532DD op-amps are used per channel to provide current-to-voltage conversion, filtering, and output buffering. The incoming 12-volt AC from the external power supply is half-wave voltage-doubled to produce unregulated +25 and -25 volts DC. Two three-terminal regulators reduce this to +15 and -15 volts to operate the output op-amps. Additionally, the incoming AC is half-wave rectified and filtered to produce about +13 volts DC. A supplementary RC-filter section follows, which feeds two three-terminal regulators that produce +5 volts to run the digital circuitry. *B.H.K.*

This lack of perfect low-level linearity also affects the noise-modulation test, as we shall see.

In the noise spectra (Fig. 5), the 1-kHz peak, which should be at exactly -80 dBFS (the level of the input signal), is a bit higher than that in both channels. The right channel is only a bit high, but the left channel is noticeably higher, has more significant harmonics, and has a bit more hum.

In the noise-modulation test devised by Richard Cabot of Audio

Precision (Fig. 6), the spectrum of the output noise from 300 Hz to 20 kHz in a 1/3-octave bandwidth is plotted as a function of a 41-Hz excitation signal for levels of -60, -70, -80, -90, and -100 dBFS. If low-level linearity is good, each of these spectral plots will overlaid. In the left channel (Fig. 6A), the amount of noise above 1 kHz does vary with signal level, which is what the test is designed to show. (The bumps below 1 kHz in the curves for -60 and -70 dBFS are attributable to harmonic distortion components produced by the X-DAC's low-level nonlinearity.) The right channel (Fig. 6B) is much better. Although the curves in Fig. 6 slope upward, the noise level is actually pretty much the same at every frequency. But because there are more frequencies per octave in higher third-octave bands, the measured noise level in these bands rises at a rate of 10 dB per decade.

Crosstalk versus frequency in both directions was 80 dB or better over the entire fre-

Table 1—S/N ratios. Quantization noise was -89 dBFS in the left channel and -90.6 dBFS in the right; dynamic range was 92.6 dB in the left channel and 97.6 dB in the right.

	-120 dBFS Signal	
	LEFT	RIGHT
Wideband	85.2 dB	86.7 dB
22 Hz to 22 kHz	87.0 dB	89.0 dB
400 Hz to 22 kHz	87.4 dB	91.0 dB
A-Weighted	89.4 dB	93.1 dB
	Digital-Zero Signal	
	LEFT	RIGHT
Wideband	90.1 dB	89.1 dB
22 Hz to 22 kHz	95.9 dB	93.0 dB
400 Hz to 22 kHz	97.8 dB	99.6 dB
A-Weighted	100.1 dB	101.8 dB

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ASSOCIATED EQUIPMENT USED

Equipment used in the listening tests for this review consisted of:

CD Transports: PS Audio Lambda Two Special and Sonic Frontiers SFT-1

CD Electronics: Genesis Technologies Digital Lens anti-jitter device and Sonic Frontiers SFD-2 MKII and Classé Audio DAC-1 D/A converters

Preamplifiers: Forssell balanced tube line driver, Sonic Frontiers Line-3, and the reviewer's passive signal selector/volume controller

Amplifiers: Sonic Frontiers Power-3 mono tube amplifiers, Sumo Gold Class-A (updated with parts

upgrades by its designer, Jim Bongiorno), and Crown Macro Reference

Loudspeakers: Genesis Technologies Genesis Vs

Cables: Digital interconnects, Illuminati DX-50 (AES/EBU balanced) and Parasound Databridge (unbalanced); analog interconnects, Transparent Cable MusicLink Reference (balanced) and Music and Sound (unbalanced); speaker cables, Transparent Cable MusicWave Reference

Other: Grado SR125 headphones and Musical Fidelity X-CANS Class-A tube headphone driver

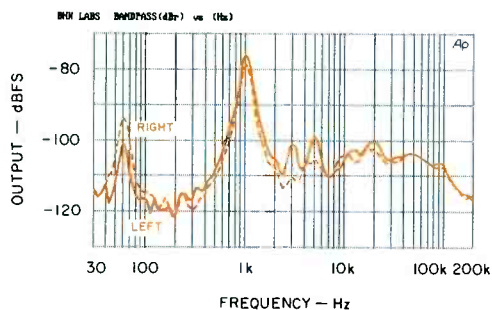


Fig. 5—Noise spectra.

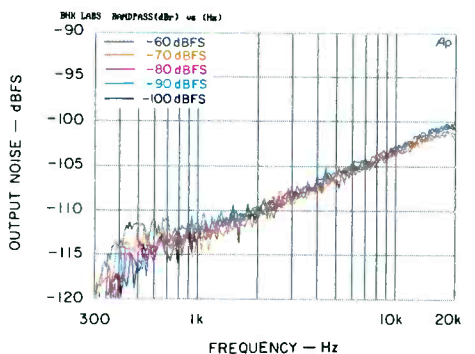
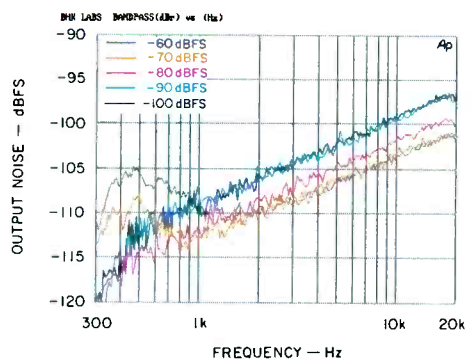


Fig. 6—Noise modulation for left channel (A) and right channel (B).

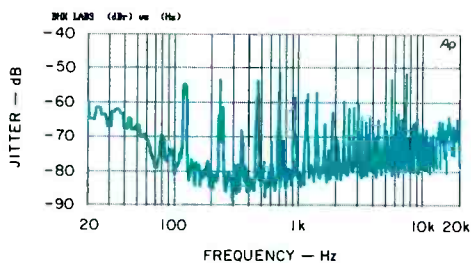


Fig. 7—Jitter spectrum.

frequency range. In addition to the usual 6-dB/octave rise above about 2 kHz (where the crosstalk was better than 100 dB), crosstalk increased below about 400 Hz, reaching 80 dB at 20 Hz.

The jitter spectrum of the X-DAC at the word-clock input to the PCM69AP D/A chip is plotted in Fig. 7, with the digital input signal to the X-DAC set to infinity zero. In the graph, 0 dB represents 10 nanoseconds (ns) peak to peak; this is equivalent to 3.54 ns, or 3,540 picoseconds (ps), rms. A spectral component of, say -60 dB, represents 10 pS peak to peak, or 3.54 pS rms. Most of the strong harmonic components are the fundamental and multiples of the block rate (the sampling frequency divided by 192, or 229.7 for 44.1-kHz sampling) with a strong 120-Hz component that is probably an artifact of the jitter detector in my test setup. The equivalent rms value of this spectrum is about -43 dB, or 25 pS, which is satisfactorily low for this test. However, the periodic nature of the X-DAC's jitter is likely to have more effect on the audio output than if the jitter were more random in nature.

Signal-to-noise ratios, quantization noise, and dynamic range are enumerated in Table 1. The X-DAC's

AC line draw was found to be less than 100 milliamperes.

Use and Listening Tests

I first listened to the X-DAC with headphones via Musical Fidelity's X-CANS tube headphone driver, and the sound was quite good. When I compared it to my reference D/A converters, the X-DAC's sound wasn't quite as transparent and spacious; it also had a touch more spittiness on vocals and edginess in the highs. These small but noticeable differences really didn't get in the way of the music, however. When I switched back from the reference converters to the X-DAC, I was easily able to accommodate to its sonic character and get into the music.

Listening with Genesis V speakers was largely a repeat of the headphone experience. I was able to enjoy my music with the X-DAC without any overwhelming desire to return to my reference (and considerably more expensive) D/A converters. Spaciousness, dimensionality, and soundstaging were very good, as were tonal neutrality, bass extension, and impact. Additionally, edginess was low.

This little DAC really sounds quite good despite a few measurement anomalies. Operation of the X-DAC was flawless, with no surprises or weird behavior. I enjoyed my experience with it, and I would commend it to anyone in the market for a good, moderately priced D/A converter.

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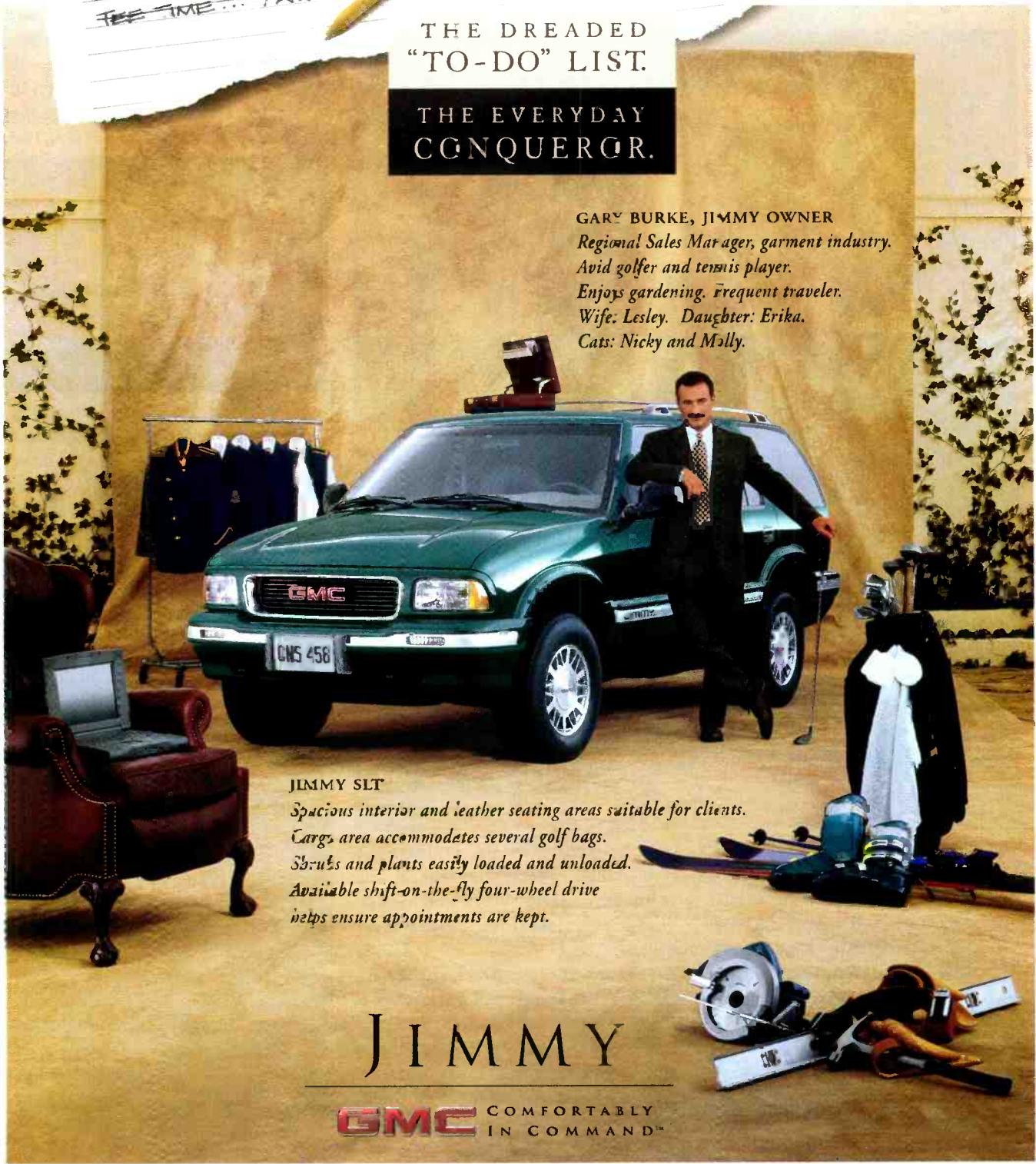


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D. B. KEELE, JR.

MB QUART DOMAIN D55 SPEAKER



The German company MB Quart's speaker offerings in the American market have changed considerably since I reviewed the 490MCS for the February 1992 issue. Until late 1995, MB Quart designed and manufactured all its speakers in Germany. Now most of the speakers the company sells in the U.S. are built here, using drivers made in Germany. (MB Quart's car and in-wall speakers, headphones, and a few other products are still imported.) Its American-made Do-

main series comprises nine models, a mix of bookshelf, tower, center-channel, and surround speakers plus two active subwoofers; prices range from \$299 to \$999 per pair.

The most expensive of these—in fact, the highest-priced speaker MB Quart offers in the U.S.—is the Domain D55, a 2½-way tower having two 6½-inch cone woofers and a 1-inch dome tweeter. The drivers are flush-mounted and arranged vertically, with the tweeter centered between the two

woofers. This is not, however, a symmetrical D'Appolito configuration in which both woofers handle the same frequencies. The D55's bottom woofer, which has a vented enclosure, operates only up to 120 Hz; the top woofer, which has a sealed enclosure, operates up to 2.9 kHz, where the tweeter takes over. Below 120 Hz, both woofers operate together. Just below the bottom woofer is its long, 10-inch port tube, 3 inches in diameter and flared at each end, which tunes that woofer and enclosure to 38 Hz.

The D55 and most of the other Domain speakers have handsome cabinets with black grilles set into furniture-quality front panels and black vinyl sides and tops. Each

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OF FINISHES ON
ITS DOMAIN SPEAKERS.**

front panel and grille comes off as a unit, which you can replace. Panels are available in 10 finishes, including traditional and exotic woods, piano black, and Prime (which you can stain, paint, or wallpaper). Because it's easier to stock front panels in various finishes than entire speakers, this system enables MB Quart to offer a wide variety of finishes and enables you to change a speaker's finish as your decor or taste changes.

The D55's removable front panel is built of ¾-inch medium-density fiberboard,

Rated Frequency Response: 32 Hz to 22 kHz, ±3 dB.

Rated Sensitivity: 90 dB at 1 meter, 1 watt applied.

Rated Impedance: 4 ohms, nominal.

Rated Power Handling: 175 watts, peak.

Dimensions: 41½ in. H x 8⅞ in. W x 14½ in. D (105.1 cm x 22.5 cm x 36.8 cm).

Weight: 52 lbs. (23.6 kg) each.

Price: \$999 per pair.

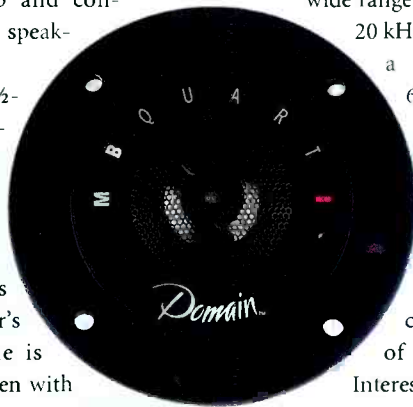
Company Address: 25 Walpole Park South, Walpole, Mass. 02081; 800/962-7757 or 508/668-8973; mbquart@tiac.net

For literature, circle No. 93

Photos: Michael Groen

which makes it very heavy and substantial, and is covered with veneer. It attaches to the front of the cabinet via six heavy-duty thin pegs. The grille frame is treated with absorptive foam below the tweeter, to decrease reflections and reduce diffraction. The rest of the cabinet is also built very solidly, using a combination of medium- and high-density fiberboard. Its interior is divided into three cavities by two shelves. The top shelf, 9½ inches below the top, forms a closed cavity for the upper woofer. The compartment between this shelf and the other one, which is 11 inches above the cabinet's bottom, forms the lower woofer's vented enclosure. Interestingly, the bottom chamber, below the second shelf, contains only the input-connection cup and contributes nothing to the speaker's bass.

The D55's two 6½-inch woofers have treated fiber cones, butyl rubber surrounds, long-throw voice coils, and strong ferrite magnets that are 3½ inches in diameter. The tweeter's 1-inch titanium dome is covered by a black screen with an integral phasing ring that



MB QUART IS PROUD OF THE D55'S TWEETER, WHICH IS ALSO USED BY MAKERS OF FAR MORE EXPENSIVE SPEAKERS.

The D55's crossover is on a single printed-circuit board, just behind the bottom woofer. The section feeding that woofer is a first-order low-pass filter, an inductor in series with the driver. The top woofer is fed by a more complicated third-order low-pass filter comprising three inductors, two capacitors, and a resistor. There is also a series resistor-capacitor impedance compensation network in parallel with each woofer. The tweeter is connected to a third-order high-pass filter comprising an inductor, three capacitors, and a resistor. The smaller capacitors are high-quality metallized-polyester film units; the larger inductors have laminated steel coil cores, the smaller ones air-core coils.

All internal connections use stranded, 16-AWG cable except for 18-AWG cabling to the tweeter. The cables are connected to the drivers by push-on terminals. On the rear of the D55 is a single pair of five-way gold-plated binding posts with standard, ¾-inch, spacing.

Measurements

Figure 1 shows the MB Quart D55's frequency response, measured with and without grille in a large anechoic chamber. The measurements were taken at the height recommended by MB Quart, on the top woofer's axis. Over the wide range from 40 Hz to

20 kHz, the curve fits a fairly tight, 6-dB, window (+1, -5 dB, referenced to 1 kHz). Above 500 Hz, the grille causes significant deviations of about ±2 dB. Interestingly, the elevated region between 550 and 1,100 Hz is raised even more by the grille.

Averaged from 250 Hz to 4 kHz, the speaker's sensitivity measured

89.9 dB SPL at 1 meter for a 2.83-volt input. I suspect, therefore, that MB Quart's virtually identical sensitivity rating of 90 dB is for the same input voltage (which corresponds to 1 watt into 8 ohms and 2 watts into the D55's rated impedance of 4 ohms) rather than the stated input of 1 watt (which would be only 2 volts rms at the rated 4-ohm impedance). Otherwise, there would be a 3-dB discrepancy between the manufacturer's rating and my measurement. The right and left speakers matched within a close ±1 dB except in the one-third octave centered at 1.3 kHz, where

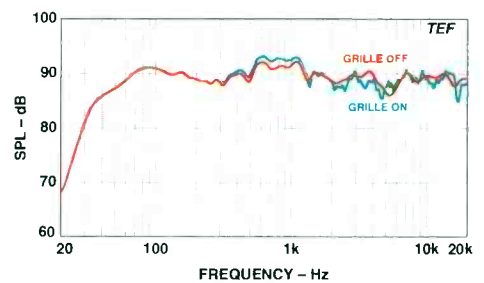


Fig. 1—On-axis frequency response.

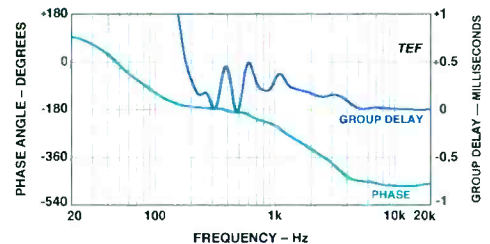


Fig. 2—On-axis phase response and group delay.

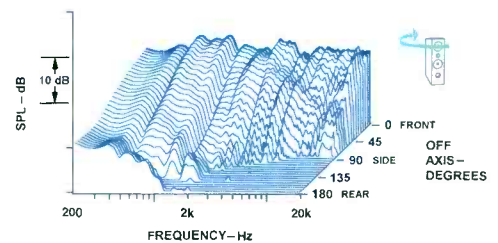


Fig. 3—Horizontal off-axis frequency responses.

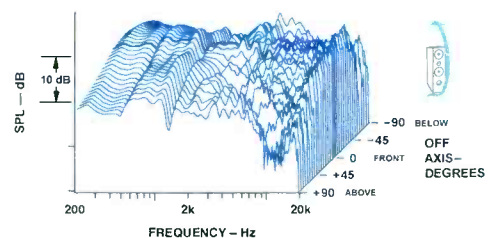
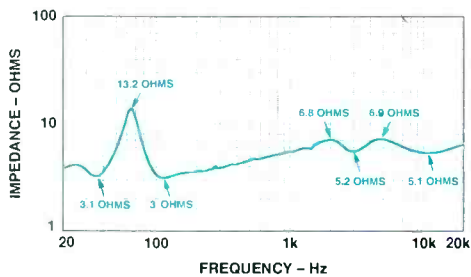


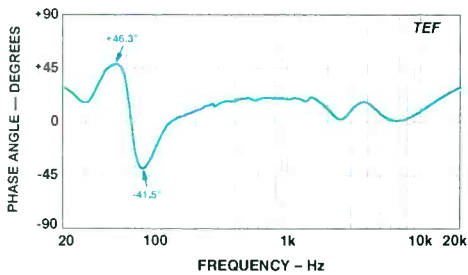
Fig. 4—Vertical off-axis frequency responses.

one speaker's output fell 3 dB below its mate's.

Figure 2 shows the D55's phase and group-delay responses, referenced to the tweeter's arrival time. The phase curve falls continually with frequency to about -460° above 5 kHz, well into the tweeter's range. The falling phase between 20 Hz and 5 kHz



A



B

Fig. 5—Impedance magnitude (A) and phase (B).

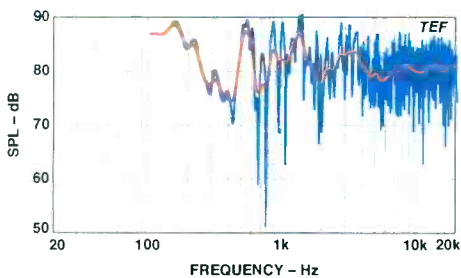


Fig. 6—Three-meter room response.

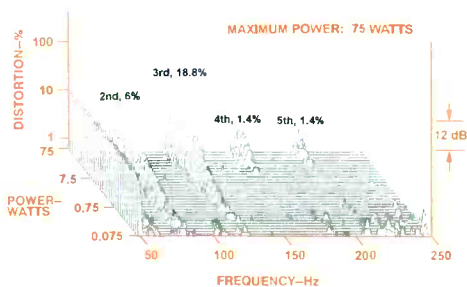


Fig. 7—Harmonic distortion for E_1 (41.2 Hz).

indicates that the acoustic output of the woofer/midrange slightly lags the tweeter's output; the amount of lag is proportional to the rate at which the phase slopes off with increasing frequency.

The group delay, which is calculated from the phase, indicates the rate at which the phase curve falls with frequency and hence the amount of lag, or delay, at each frequency. Ideally, lag would be constant at all frequencies, indicating that the speaker's acoustic output is aligned in time across the audio band and that its phase is linear with frequency. Such a phase curve would be a straight line if plotted on a linear frequency scale. The phase curves in this review, however, are plotted on logarithmic frequency scales so that the data can be plotted over a wide frequency band; on this scale, a straight phase curve *does not* imply a constant delay.

When averaged from 1 to 4 kHz, the group-delay curve in Fig. 2 indicates a relatively low offset of about 0.2 millisecond. The undulations between 300 Hz and 1.4 kHz are due mostly to minimum-phase peaks and dips in frequency response over this range. If response were equalized flat, these undulations would disappear.

The D55's horizontal on- and off-axis responses are shown in Fig. 3. (The bold, 0°, curve at the rear of the graph is on-axis response.) Although the response is a bit rough, the curve-to-curve uniformity attests to very even horizontal coverage. Between 20° and 50° off axis, the response has a high-frequency peak at 17.5 kHz (not clearly visible).

Figure 4 shows the D55's vertical on- and off-axis responses. (The bold curve in the middle of the three-dimensional plot is on axis.) In the main vertical listening window, $\pm 15^\circ$, the curves are mostly quite uniform except for a dip (not clearly seen) between 2 and 4 kHz, caused by cancellation at the 2.9-kHz crossover frequency. Even in

this range, responses are quite uniform on axis and up to 10° above it, with the dip most prominent at 20° to 30° above and below the axis. As with the horizontal off-axis responses, a 17.5-kHz peak in the

tweeter's response occurs between 20° and 50° off axis.

The D55's impedance magnitude (Fig. 5A) has the two bass peaks (at 25 and 63 Hz) and a dip (at 38 Hz, the approximate tuning frequency) that are characteristic of vented enclosures. But you'll have to look closely to see that, because the impedance rise at 25 Hz is more of a bump than a peak. The reason is that the D55's two woofers, one sealed and one vented, are connected in parallel up to 120 Hz. These parallel loads don't lower impedance much at 63 Hz, where both woofers' impedance peaks roughly coincide. The sealed woofer's impedance rolls off rapidly below its peak, however, becoming low enough by 25 Hz to swamp the vented woofer's lower peak.

The D55's impedance variation is a moderate 4.4 to 1 (13.2 divided by 3). Thus, cable resistance should be limited to a maximum of about 0.045 ohm if you want to

**THE D55s SOUNDED
LIVELY AND DYNAMIC,
WITH STRONG BASS
AND SMOOTH,
EXTENDED HIGHS.**



The D55's port tube is flared at both ends.

keep cable-drop effects from causing response peaks and dips greater than 0.1 dB. For a typical run of about 10 feet, that would imply 12-gauge (or larger), low-inductance cable.

The D55's impedance phase (Fig. 5B) reaches its maximum, +46.3°, at 50 Hz and its minimum, -41.5°, at 80 Hz. A single D55 per channel should not be a difficult load for any competent amplifier.

The speaker's cabinet is fairly solid. A high-level sine-wave sweep caused minimal vibration except in a frequency band near 285 Hz, where the side and rear walls of the middle chamber vibrated. (If you look

The D55's sides and rear are finished in a veneer of black vinyl.



again at Figs. 5A and 5B, you'll see minor impedance anomalies at this frequency.)

The D55's woofers overloaded quite gracefully when overdriven. Their maximum excursion was about 1/2 inch, peak to peak. I noted a significant amount of dynamic offset here and in the later tests of peak power. In one of the speakers, the woofers displaced in opposite directions when driven at high levels, the top one moving in and the bottom one moving out. As is typical of closed-box enclosures, the top woofer's excursion increased as frequency decreased, reaching its maximum at about 50 Hz and staying there at lower frequencies. The excursion of the bottom woofer reached a sharp minimum at 38 Hz, the vented-box tuning frequency, and there was little chuffing from the port. The bottom woofer's excursion was less than the top woofer's from 55 down to 32 Hz but was greater below 32 Hz.

The D55's 3-meter room response, raw and smoothed, is shown in Fig. 6. The speaker was in the right-hand stereo position; the test microphone was at ear height (36 inches) at the listener's position on the sofa. From 700 Hz to 20 kHz, the averaged curve fits a fairly tight, 9-dB, window. Above 4 kHz, in the tweeter's range, the curve fits a very tight, 2.5-dB, window. Between 250 Hz and 1.7 kHz, the averaged curve undulates significantly, with peaks at

530 Hz and 1.3 kHz and dips at 410 and 605 Hz.

Figure 7 shows the D55's E_1 (41.2-Hz) harmonic distortion. The second harmonic rises to a moderate 6%, while the third rises to a fairly high 18.8%. Higher harmonics are below 1.5%. At 75 watts, the top, closed-box, woofer's excursion at 41.2 Hz was quite high, accounting for a significant portion of the third-harmonic distortion. When I remeasured distortion with the top woofer disconnected, the third-harmonic distortion dropped to less than 11% (the second harmonic remained at about 6%). At 1 meter in free space and with a 75-watt input, the D55 generated a quite usable 105 dB SPL at 41.2 Hz.

Figure 8 shows the D55's A_2 (110-Hz) harmonic distortion. The second harmonic rises to a fairly high 16.8%, the third rises only to 4%, and higher harmonics are less than 1.4%. Distortion remains quite low below 20 watts. Above 20 watts, the speaker started sounding somewhat harsh.

Figure 9 shows the IM distortion versus power, created by 440-Hz (A_4) and 41.2-Hz (E_1) tones of equal power. The IM distortion rises gradually, reaching 3.7% at 10 watts, 10% at 25 watts, and a quite audible 21% at 75 watts.

The D55's short-term peak power input and output are shown in Fig. 10. The peak input power starts at 22 watts at 20 Hz, and then it rises quickly to 180 watts at 43 Hz, which is near the vented-box resonance. After a slight fall it then rises again, leveling off at about 3.7 kilowatts above 1.4 kHz.

With room gain, the D55's peak output starts fairly high, 90 dB SPL, at 20 Hz; it then rises very rapidly, passing through 110 dB at 34 Hz before its slope diminishes, ending up at around 125 dB above 600 Hz. The D55's bass output is above average for the speakers I have tested for *Audio*.

Use and Listening Tests

I normally have no say about the cabinet finishes on the speakers I get for review.

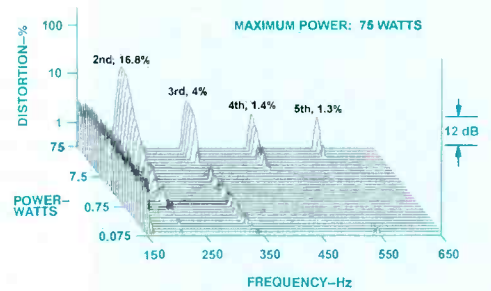


Fig. 8—Harmonic distortion for A_2 (110 Hz).

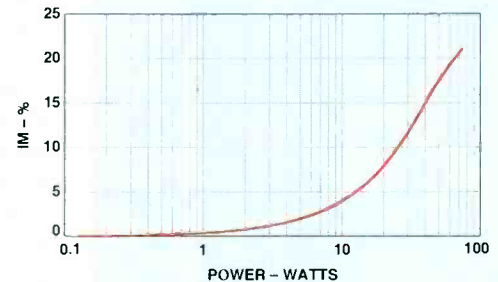


Fig. 9—IM distortion for A_4 (440 Hz) and E_1 (41.2 Hz).

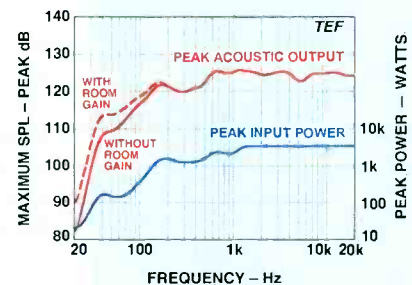


Fig. 10—Maximum peak input power and sound output.

Sometimes I get whatever finish is handy, or I get plain black (possibly because speakers can get scratched up when they're moved around a lab for testing). So it was refreshing to be asked what finish I wanted on the MB Quart Domain D55s. From the many choices available, I selected oak, which was very attractive.

I was surprised that no manual was packed with the D55s, but that turned out to be deliberate. All Domain speakers are packed without manuals, because MB Quart intends buyers to get any necessary advice from their dealers. To that end, the company has a comprehensive dealer train-

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ing program. I was sent some of the dealer training material, which goes into detail on speaker placement, room acoustics, and related matters. It was primarily home theater oriented and specifically recommended placing the D55s well away from room boundaries and not locating them close to a TV, because these speakers have no magnetic shielding. (MB Quart recommends the shielded D30 bookshelf speakers for use near a TV.)

I listened to the D55s in a conventional stereo listening setup, with their grilles off. I placed the speakers 2½ feet from the side walls and 4 feet from the wall behind them, just about what MB Quart recommends. Small spikes, which screw into the bottom of each speaker, are supplied, but I did not use them. Associated listening equipment included a Krell KRC preamp driving a Crown Macro Reference power amplifier, with B&W 801 Matrix Series 3 speakers for comparison.

My first impression was extremely positive. The D55s sounded lively and dynamic, with strong bass, smooth and extended highs, and broad, even coverage.

The D55s did an excellent job of bringing out the subtleties of Ronn McFarlane's fingering in his lute playing on *A Distant Shore* (Dorian DOR-90242). Bach's Suite in E Major, a favorite of mine, was particularly well rendered; the voicing and overall tone were quite similar to what I heard on the B&W 801s.

On the more dynamic cuts by the dmp Big Band on the *Glenn Miller Project* (dmp CD-519), the D55s sounded clean and open, with minimal compression or congestion on loud horn passages. Bass was smooth and extended. The vocals and percussion on "PENNSYLVANIA 6-5000" were quite effective and very realistic. (Incidentally, this excellent CD is encoded in Circle Surround but also sounded very impressive played in Dolby Surround on my home theater setup.)

The D55s were quite sensitive, requiring only one-third as much power as the B&Ws for the same sound levels. That's like getting a new amplifier with three times the power for free!

When reproducing pink noise, the Domain D55s' overall character and tonal balance were quite similar to the B&Ws' while I was seated. But when I stood up, there

were definite upper-midrange differences between the two systems. In comparison, the B&Ws' nearly perfect vertical coverage maintained the same sound whether I was seated or standing.

On third-octave band-limited pink noise, the D55 provided no usable fundamental output in the 20- and 25-Hz bands. At 32 Hz, however, its output was quite usable and fairly clean; from 40 to 80 Hz, the output was quite strong and clean but began to sound somewhat harsh when turned up loud, especially at and below 50 Hz (where the top woofer's displacement was greatest).

On pipe organ music that had heavy bass pedal notes, the D55s delivered extended and wall-rattling response. However, the D55's extreme low end was not quite as robust as that of the B&W speaker (which is among the best bass reproducers) and did exhibit some intermodulation when the deep pedal notes were accompanied by higher frequencies.

The D55s handled male and female vocals with equal ease, sounding open, honest, and faithful to the originals. These qualities were evident in the speakers' clean, clear, and effortless reproduction of the female duet on "Cancion," from the Clarity Sampler (Clarity Recordings CCD-1010, a favorite demo disc of mine). The wood-block percussion on this track was particularly realistic. The D55s were equally at ease playing massed choral music, though some midrange tonal differences and a slight high-frequency emphasis made them sound very slightly hollow when compared with the B&Ws. On loud rock and country music, the D55s reached party levels with ease and delivered tight, gut-thumping bass.

On wide-range classical symphonic music, imaging and soundstaging were excellent. Center images on mono material were stable and appropriately narrow.

MB Quart's Domain D55s are excellent all-around sonic performers. They have fine looks, and their price is quite reasonable. The interchangeable grille frames are attractive, and it's great to have the choice. The D55s will perform equally well as stereo speakers or as main speakers in a home theater. They demand serious attention from anyone desiring a very good buy in loudspeakers. A

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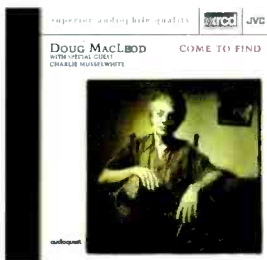


Duke Ellington

Duke's Big 4

JVCXR-0022

This sonically pristine release captures Duke Ellington, Joe Pass, Ray Brown, Jimmy Blanton and Louis Bellson at the peak of their game. An intimate look at one of the greatest musicians and composers of all time.



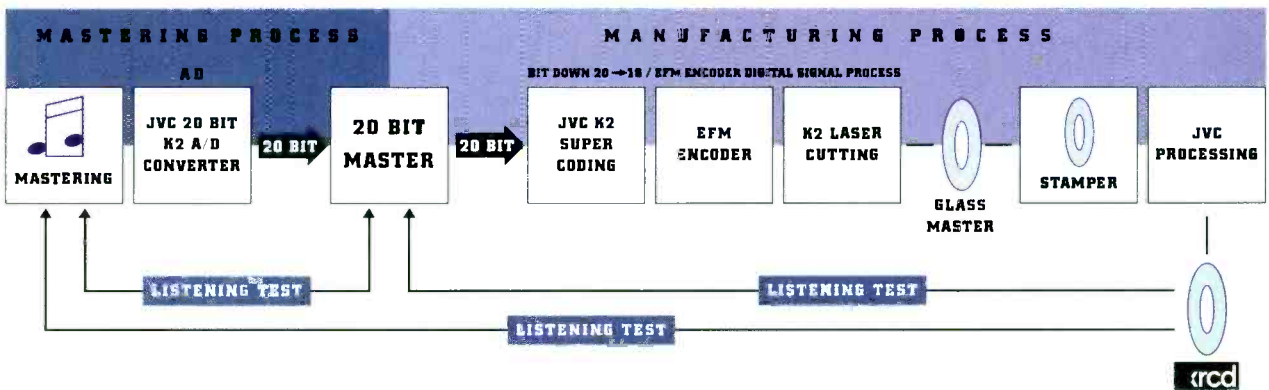
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Come To Find

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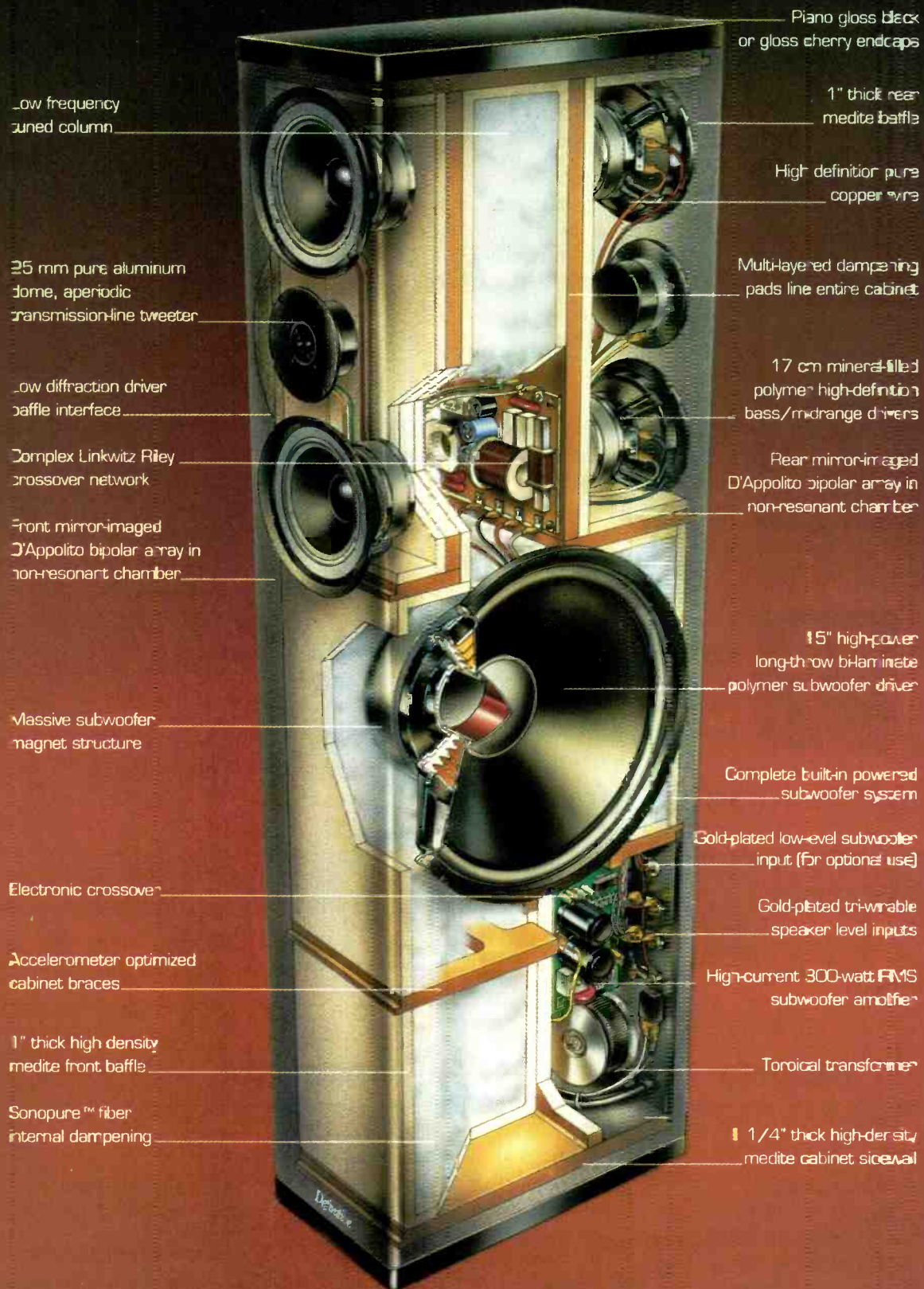
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MARANTZ MODEL 7 PREAMP & MODEL 9 MONO AMP

I am no anachrophiliac. I get no spiritual warmth from the glow of tube filaments, and none of my gods rotate at 33 $\frac{1}{3}$ rpm. There are, however, a number of classic audio designs that deservedly have lived far beyond their time.

My first true high-end system was based on the Marantz Model 7 preamp and Model 9 mono amps and the original Quad electrostatic speakers. I made the mistake of selling this system before I went on an overseas assignment, and it was years before I had another that sounded as good. A number of very demanding audiophiles still use these components, and audiophiles in Japan have long imported vintage Marantz amps and preamps, often paying far more than the original prices. There is even a small cottage industry engaged in updating and refurbishing the Model 7 and Model 9. These Marantzes are among the most attractive components produced during the golden age of tubes, and the work of designers Sid Smith and Saul Marantz has become the stuff of legend. So it is perhaps not surprising that Marantz has brought back the Model 7 and Model 9 (and the Model 8B stereo amp, as well).

The new Model 7 and Model 9 are as close to exact copies of the originals as is possible today, down to their circuits, components, front and

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For literature, circle No. 94



rear panels, and even the slightly irregular hand-drawn lettering of the front panels. The resistors and capacitors are virtually the same, and point-to-point wiring is still used.

The Model 9 still uses special multisection electrolytics and a TA-3 output transformer. But it no longer uses barrier-strip speaker connections, which are now illegal in Europe. The Model 7 preamp retains such now-arcane features as a tape-head input (omitted from other preamps for well over a decade) and equalization settings for old Columbia LPs and 78s as well as the RIAA standard.

Marantz is definitely not just exploiting a successful past model's name—you really do get the original, only without the problems associated with aging parts. But reviving these classics has not come cheap: The Model 7 preamp costs \$3,800, and the Model 9s cost \$4,200 each, or \$8,400 per stereo pair.

The company's meticulous care shows up in sound quality. I compared the new Marantz replicas to a

friend's 35-year-old originals. His system resembles my old one in that it uses Quad electrostatic speakers, albeit the modern version (the ESL-63); however, he has a much better turntable and cartridge than I'd had, and he has (horrors!) CD and DAT decks in the system. We conducted a prolonged A/B listening comparison, and it soon became clear that the new Marantz Model 7 and Model 9 sounded virtually identical to the older models—with a few important differences. The new Model 7 preamp was slightly quieter, and its switches made less noise and were more reliable. The new Model 9

Photo: Michael Groen

amps reproduced low-level passages a bit more clearly. I suspect that this low-level difference arose because of aging electrolytics in the old units.

The new Model 7 preamp and Model 9 amplifier had a very similar sound with a very well-chosen mix of characteristics. This sound was open and dynamic, with a great deal of musical detail. It was also slightly warm, without rolloff or loss of treble detail. The resolution of low-level passages was very good. Low-bass extension was good, bass power very good, and bass control and detail (inevitably somewhat dependent on amplifier/speaker interaction) also very good. Depth and imaging were very good to excellent, delivering a smooth, realistic soundstage. And the Model 7 preamp had just enough warmth to improve the sound of many CDs without significant loss of detail.

The Model 7 design did exhibit some signs of age. Some top-of-the-line modern competitors have a bit more dynamics here, a bit more depth there, and a little bit more low-level resolution. The Marantz preamp was slightly noisier than a number of modern tube preamps (but then, the Model 7 always stressed sound quality over lowest possible noise). For LP listening, this noise level definitely calls for a high-output moving-coil or moving-magnet cartridge, unless you like listening through tube hiss; some modern tube preamps work well with medium-output moving-coil pickups. I suspect that the various level adjustments, tone controls, and filters in the Model 7 do add a bit of coloration to the signal path, but they're very useful if you have a large collection of LPs or analog tapes. You may need to fiddle around just a bit with tube substitutions to get the lowest noise, and grounding can be slightly problematic. There are also faint, nearly inaudible, traces of hum and crosstalk that are not apparent in today's best designs.

The old-style RCA jacks are also a bit close together and do not have the tight fit of the best modern jacks. Thick, hard-to-bend interconnects and large-diameter RCA plugs would not be good choices, and I'd also be a bit careful of interconnects that are not fully grounded at both ends. Interconnect placement also requires some care to avoid picking up hum from the preamp and amplifier; however, it shouldn't take

you long to position your interconnects out of hum's way.

The Model 7 may not be the quietest or purest sounding preamp available, but I'd find it hard to believe that anyone who loves the natural sound of voices or acoustic instruments would not find the Marantz preamp still competitive.

The Model 9's sound quality was equally impressive. There are many superb tube amps whose sounds differ in nuances of soundstage, transparency, dynamics, and timbre, and such nuances should affect your choice of amps for your particular tastes and system. But I do not know of any amplifiers at the Model 9's power level that are decisively better in an absolute sense.

Even if one were not seduced by the Model 9's classic styling, its smooth musicality would be impossible to ignore. The sound was just slightly warm, but it was so open and dynamic that the upper octaves remained transparent and clear. The Marantz amp's soundstage wasn't as detailed as that of the best Audio Research, Conrad-Johnson, and VAC amps, but it had highly realistic proportions and the level of information was often more natural than the sometimes exaggerated detail of other amps. The Model 9 wasn't quite as sweet and musically liquid as the best triode designs—or as colored—but it provided an exceptionally realistic illusion of a live performance.

The Model 9 had excellent power bandwidth, providing outstanding dynamics at frequencies approaching the deep bass with speakers such as the large Thiel and B&W models. But, as it delivers just 70 watts, its bass dynamics will depend on the sensitivity and character of your speakers.

A minor caution is that the Model 9's transformers generate a fairly large hum field (not unusual in a tube amp), so, as with the preamp, you need to use fully grounded interconnects and take care to position them out of this field. The stylish speaker connectors can be used only with flexible, small or medium-sized speaker cables.

After 40 years, the Model 7 and Model 9 designs hold up well against the latest tube preamps and amps. The new Model 7 and Model 9 are extraordinary tributes to the design skills of Sid Smith and Saul Marantz and to the work of VAC's Kevin Hayes in helping to re-create the original designs and manufacturing methods.

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—Richard Bowden
Bay Bloor Radio
Toronto, Ontario, Canada



Bay Bloor Radio

Q

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A

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—Linda Rozak
Columbia Audio/Video
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CLASSICAL RECORDINGS



Kancheli: Caris Mere
 Maacha Deubner, boy soprano;
 Eduard Brunner, clarinet;
 Kim Kashkashian, viola;
 Jan Garbarek, soprano saxophone;
 Stuttgart Chamber Orchestra,
 Dennis Russell Davies
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 78118-21568; 54:11
 Sound: A, Performance: A+



Composer Giya Kancheli invites comparisons to Arvo Pärt. Each man comes from a former state of the Soviet Union (Kancheli from Georgia), and each suffuses his music with a deep sense of spirituality rooted in Western Christianity. Kancheli even refers to his works as prayers. But while many of Pärt's compositions could be part of the ancient liturgical music canon, Kancheli's music is born in the strife of modern Western orchestral traditions.

"Midday Prayers" and "Night Prayers" are part of Kancheli's cycle *Life Without Christmas*. They typify his style, mixing cathedral ambiances and hints of folk melodies with more strident contemporary tonalities. The Stuttgart Chamber Orchestra, conducted by Dennis Russell Davies, contrasts tense passages of sustained strings with raindrops of piano and the cloistered clarinet of Eduard Brunner on "Midday Prayers." Kancheli gives the illusion of reverie but often disabuses you of it with apocalyptic cadenzas.

There is a sense of redemption, albeit riddled with conflict, in Kancheli's music. Boy soprano Maacha Deubner is a voice of purity on "Midday Prayers." The piece coalesces around his singing of the Latin text to the Passion as he intones, "My God, God, why hast thou forsaken me?" It's not a prayer so much as a struggle between anguish and surrender. "Night Prayers," on the other

hand, is a "dark night of the soul" kind of work, with strings and horns emulating Tibetan chants while Jan Garbarek sounds like an acolyte simultaneously trying to fit in and break free.

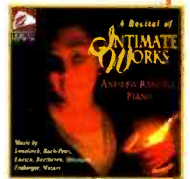
The title piece, "Caris Mere," exhibits similarly contrasting elements. Here, Deubner and violist Kim Kashkashian wander along separate paths that interlace as much as they interrupt. It's a dialog between this world and the other, without a clear resolution. This is the conflict that makes Giya Kancheli's music both beautiful and timeless. *John Diliberto*

Illustration: Marina Sagona

A Recital of Intimate Works

Andrew Rangell, piano
 DORIAN DISCOVERY DIS-80147
 DDD; 70:37
 Sound: A, Performance: A

Unless the pianist is of the caliber of, say, Vladimir Horowitz, recorded recitals of short piano pieces often prove boring. Andrew Rangell's expert programming keeps *A Recital of Intimate Works* from being just that. The group of nine short pieces by Jan Pieterzoon Sweelink, Bach (arranged by Egon Petri), George Enescu, Beethoven, Olivier Messiaen, Johann Jacob Froberger, and Mozart is immediately attractive for its inclusion of obscure music and notable for its absence of chestnuts (with the exception of Bach's "Sheep May Safely Graze," which Rangell saves for his closing selection). Rangell has a reputation for including works from a variety of periods in his concert performances. But the musical flow is superb on this album, establishing unexpected connections between the diverse pieces—such as an effortless segue from Beethoven's Six Bagatelles to a short, freely tonal work by Messiaen. *Intimate* doesn't necessarily mean quiet here; some of these works have considerable dynamic variations. But it does convey the overall feeling of this lovely, naturally recorded recital. *John Sunier*



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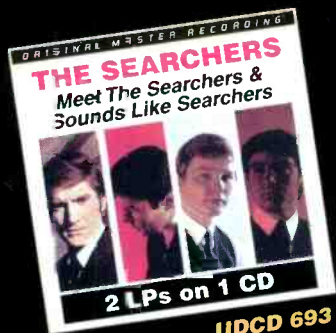
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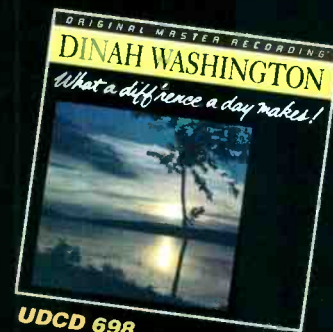
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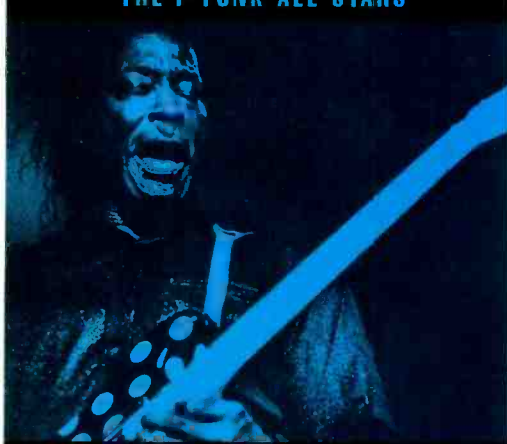
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 NAXOS 8.550961; DDD; 71:18
 Sound: A-, Performance: B+

François "The Great" Couperin, a little older than Bach, was the apotheosis of French baroque, and these three harpsichord suites are the apotheosis of Couperin. Laurence Cummings' performances are almost free



of the overarticulated, stumbling rubato that disfigures so many harpsichord and fortepiano performances these days and otherwise are stylish and zesty. The recording, made in a Hampshire, England, church, is accordingly reverberant—perhaps a little too reverberant.

Robert Long

Stravinsky: Symphonies of Wind Instruments, Septet, Octet for Wind Instruments, Tango for Piano, Piano-Rag-Music, and Concerto for Piano and Wind Instruments

James Tocco, piano; Detroit Chamber Winds and Friends, H. Robert Reynolds
 KOCH INTERNATIONAL CLASSICS
 3-7211 H1; DDD; 63:14
 Sound: A-, Performance: A+

One of Igor Stravinsky's greatest accomplishments is often overshadowed by his many innovations. Following centuries of string-dominated music, Stravinsky liberated woodwinds and brasses from their dependence on the violin family. More than any other major composer, he exalted the winds in his works for large orchestra and predominantly wind ensembles, such as the pieces on this recording.



With his three great ballets (*Le Sacre du Printemps*, *Firebird*, and *Petrushka*) and the chamber work *L'Histoire du Soldat*, Stravinsky's international status as a composer was firmly established by 1920. Three of his next major projects were wind oriented: *Symphonies of Wind Instruments* (1920), the *Octet for Wind Instruments* (1922-23), and the *Concerto for Piano and Wind Instruments* (1923-24). This last work, which Stravinsky often could be found performing as the soloist, combines his mania for wind sonorities with his contrapuntal writing for the piano.

The Detroit Chamber Winds and Friends plays these works with a passion. Each piece is carefully balanced by the conductor, H. Robert Reynolds, a recognized authority on wind instruments. The performances in the lower

Dag Wirén

Serenade for Strings, Cello Concerto, Divertimento, and Piano Concerto

Mats Rondin, cello;
 Mats Widlund, piano;
 Swedish Chamber Orchestra,
 Petri Sakari
 CAPRICE CAP 21513; 62:25
 Sound: A-, Performance: A

Swedish composer Dag Wirén (1905-1986) is probably best known for his delightfully mischievous and rumbustious *Serenade for Strings*, which opens this collection. But not all of his work is in the same witty vein: In the 1940s, his tone became more austere. These four works display both sides of the composer. The two concertos share a quality of grandeur and individuality. The *Piano Concerto* expands Wirén's previous diatonic style without becoming entirely atonal. This disc makes a fine introduction to an important and entertaining artist.

John Sunier



woodwinds are especially notable for their accuracy and consistent intonation. Pianist James Tocco gives an invigorating rendition of the *Concerto* and skillfully interprets the two solo pieces. Much of this music has also been recorded by the composer himself, but it is doubtful whether he ever heard it played with as much enthusiasm as these Detroit musicians generate.

Patrick Kavanaugh

Foerster: Cyrano de Bergerac Symphony Suite and Shakespeare Suite for Large Orchestra

Czech Philharmonic Orchestra; Prague Symphony Orchestra, Václav Smetáček
 SUPRAPHON SU 3041-2 011; 66:08
 Sound: B+, Performance: A+

Josef Bohuslav Foerster was more important as a teacher of many 20th-century Czech composers than as a composer himself. But he did write in every genre, always in a lyrical Romantic style that revealed influences of Dvorák, Brahms, and Wagner. Innovation was not one of his traits.





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The music professor (who died in 1951 at 91) also had a strong interest in literature and theater, as demonstrated by these two orchestral suites based on familiar dramatic characters. In the "Cyrano de Bergerac" Symphony Suite, Cyrano and his beloved Roxane are represented by two contrasting themes. Foerster's theme for Roxane came to represent romantic love, and the composer liked it so much he used it later in other works. In four movements prefaced by a short introduction, his "Shakespeare" Suite portrays some of the Bard's heroines.

Conductor Václav Smetáček's career was linked with the Prague Symphony up until his death in 1986. These interpretations, recorded originally in 1978 and 1986, have serviceable sonics and wring the very highest musical quality out of a body of music comprising admittedly secondary works. *John Sunier*

Berlioz: Harold in Italy and Tristia

Gérard Caussé, viola (in *Harold*);
Monteverdi Choir (in *Tristia*);
Orchestre Révolutionnaire et Romantique,
John Eliot Gardiner
PHILIPS 446 676; DDD; 59:28
Sound: B-, Performance: A

Berlioz: Harold in Italy, Les Francs-Juges Overture, and Rêverie et Caprice

Rivka Golani, viola (in *Harold*);
Igor Gruppman, violin (in *Rêverie*);
San Diego Symphony Orchestra,
Yoav Talmi
NAXOS 8.553034; DDD; 62:47
Sound: A-, Performance: B+

Perhaps it's unfair to compare these two "Harold" packages, so different are they in intent and method. But in the attempt to pin down some of the differences, I ended up actually A/B-ing them with a pair of players and was surprised by what I heard. (Lest you wonder, I moved the two discs back and forth, from one player to the other, so that the two D/A sections dropped out of the equation.)

John Eliot Gardiner is well established in the period instrument field and has been in the vanguard in extending that field to include the likes of Hector Berlioz. He evidently takes pains over details of timbre and balance, and it shows here and in his other recordings. The textures within the orchestra are differentiated with exceptional clarity, and the whole is infused with a sense of personal focus and purpose.



Los Tangueros

The Tangos of Astor Piazzolla

Emanuel Ax and Pablo Ziegler, pianos
SONY CLASSICAL SK 62728
DDD; 59:54
Sound: A, Performance: A

This distinctive take on tango can be attributed to *Los Tangueros'* producer, Italian arranger/conductor Ettore Stratta. He envisioned pairing Pablo Ziegler, the pianist in Argentinean composer Astor Piazzolla's quintet, with a great classical pianist for a two-piano pre-



sentation of Piazzolla's mix of traditional tango, classical, and jazz styles. Emanuel Ax was Stratta's first choice, and after Ziegler created the intricate arrangements, they made this recording of a dozen Piazzolla favorites.

Among them are "Libertango," "Michelangelo '70," "Adiós Nonino," and "Milonga del Angel." A more avant-classical sensibility is heard in "Verano Porteño," which begins like a piano piece by Alexander Mosolov. The jazzy percussive effects of Piazzolla's original performing quintet are conjured up during "Buenos Aires Hora Cero." An exciting CD. *John Sunier*

By contrast, the San Diego group sounds entirely conventional. Not stodgy, but not imbued with an equally compelling vision of the piece either. The viola soloist on the Naxos disc, Rivka Golani, too, is less sinewy than Gérard Caussé on the Philips. The overall impression, therefore, is of a plusher but somewhat less committed performance.

Naxos captured the San Diego Symphony in a hall whose reverberation time is long enough to be almost annoying, which well may mask internal orchestral detail. For whatever reasons, the Naxos pickup is distinctly less transparent overall than the Philips, and on my system its soundstage lacks some of the immediacy and depth of the Philips. But it is more stable, consistent, and believable than Philips'.

I'm not entirely sure why this should be so. The Philips venue was All Hallows (surely a church) in London. Though there is a good sense of space around the orchestra, it's too generalized to suggest specifics of the acoustics. Perhaps I'm hearing a superabundance of local microphones, intended to tame an excessively reverberant space. The pickup does convey the impression of closeness. In addition, overall level is somewhat higher in the Philips recording. Indeed, there is considerably more distortion on loud passages in the Philips than in the Naxos, as witness the last few bars of the first movement.

So while I'd pick the Philips for the performance, I'd choose the Naxos for the stereo—and for the budget price, of course. That leaves the fillers. On Naxos, the Overture is all that survives of a student opera, but characteristic Berlioz nonetheless, while the "Rêverie" is a reworking by Berlioz of an aria discarded from his opera *Benvenuto Cellini*. Gardiner has chosen three pieces for chorus and orches-

tra that Berlioz once collected into a sort of suite: "Méditation Religieuse," "The Death of Ophelia," and "Funeral March for Hamlet." All of these pieces are interesting; none is must-have.

Oh, one final advantage to the Naxos: It puts its fillers at the head. So if you start the disc only at the beginning of "Harold," on track 3, you can listen to it without programming the player and still not slop over into lesser fare at the end. *Robert Long*

Chadwick: Suite Symphonique, Aphrodite, and Elegy

Czech State Philharmonic (Brno),
José Serebrier
REFERENCE RECORDINGS
RR-74; 72:25
Sound: A+, Performance: A

The ardent Germanic Romanticism of American composer George Whitefield Chadwick's lush orchestral scores can now be appreciated thanks to this album and Reference Recording's previous Chadwick release (RR-64). These were inspired by the success of Howard Hanson's recording of the composer's colorful Symphonic Sketches (Mercury Living Presence 434 337 and its original LP).

All three works on this CD are recording premieres and come from a later period in Chadwick's life than those of the earlier album. Chadwick's Suite Symphonique is more abstract than his Symphonic Sketches, but each of its four movements has its own imaginative character. The Intermezzo movement, for example, jovially parodies other musical styles of the time, no-



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tably Debussy's. Orchestral counterpoint similar to that in the Sketches is found in the joyfully noisy Finale. *Aphrodite* is a tone poem in which Chadwick imagines the sights passing before a statue of the goddess. The touching Elegy honors the composer's lifelong friend and fellow composer Horatio Parker.

Exemplary sound transparently conveys the composer's varied orchestrations. And this HDCD recording's richly ambient character should unfold nicely through most surround processors; it added to my involvement in the music.

John Sunier

Reger: Three Suites for Cello Solo and Works for Cello and Piano

Pieter Wispelwey, cello;

Paolo Giacometti, piano

CHANNEL CLASSICS 9596; 61:10

Sound: A, Performance: A

It is unfair that Max Reger's musical life is so often linked with that of Bach. Like the baroque master, Reger, who was born in 1873 and died in 1916, was known more as an organist than a composer. He followed in Bach's footsteps in additional ways: He served as organist for the Leipzig Thomaskirche, and his contrapuntal compositions display many similarities to Bach's part-writing. Reger did not possess Bach's level of musical genius (who

does?), but his music nevertheless has charm and individuality.

In yet another parallel to Bach, Reger composed the first major unaccompanied cello works since his predecessor's celebrated suites. Although Reger's cello suites were written in 1914, their inherent Romanticism clearly harks back to the 19th century. They are lyrical rather than profound, and their unpretentious pleasures contrast with the sublimity of the Bach works.

The Dutch cellist Pieter Wispelwey plays Reger with deftness and intelligence. For this recording, he strung his cello with gut (on the two highest strings), which is what the cellists of a century ago would have used. This yields a muted and multicolored sound, but Wispelwey's is still so huge that I wonder what he would sound like with modern steel strings!

The album cleverly intersperses several Reger compositions for cello and piano between the solo suites. Pianist Paolo Giacometti joins Wispelwey on these pieces for performances of delicate finesse. For those who have heard one too many recordings of Bach's cello suites, this disc is a breath of fresh air. Wispelwey has done his part in raising the Reger suites from curiosities to serious concert music.

Patrick Kavanaugh

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ROCK ~ POP RECORDINGS



Cheap Trick

RED ANT 002, 43:25

Sound: B, Performance: B+



In the liner notes of Nirvana's 1992 album *Incesticide*, Kurt Cobain reverentially wrote, "I'll be the first to admit that we're the '90s version of Cheap Trick. . .but the last to admit that it hasn't been rewarding." Nirvana wasn't the only band to draw inspiration from Cheap Trick's brand of commercial showmanship and outsider eccentricity. Bands such as Redd Kross, Material Issue, and Urge Overkill are unquestionably cut from Trick's familiar checkered cloth, one that's woven with blazing guitars and turbocharged melodies.

But when contemporary bands pledge allegiance to Cheap Trick, it's on the strength of the group's first five, late-'70s albums and the rowdy,

sexually charged power-pop gems they contained. For Cheap Trick, the '80s was one long artistic and commercial slump, and the band's downward spiral (and how it recently rescued itself) is as much a part of its legend as its past greatness.

Despite 1994's lackluster *Woke Up with a Monster* (which had some of the energy of yore but lacked immediacy), Cheap Trick recharged itself in the '90s and gained endorsements from such icons as Cobain and The Smashing Pumpkins. The vitality of its live shows, last year's long-overdue, four-CD retrospective (*Sex, America, Cheap Trick*, Epic/Legacy E4K-64938), and its much bally-hooded vinyl single (produced by "underground" curmudgeon Steve Albini for the indie label Sub-Pop) have restored the band's newsworthiness. And an upcoming tribute record packed with punk legends (Joey Ramone) and alterna-rockers (Smashing Pumpkins, The Posies) should help obliterate the memory of Trick's '80s washout. But ultimately, the band's renewed populari-

Photo: Michael Lavigne

→ IGGY AND THE STOOGES ←

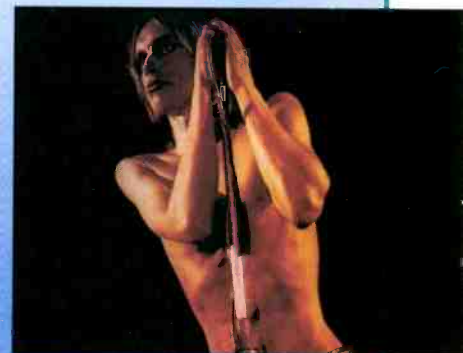
Raw Power
COLUMBIA/LEGACY
CK-66229, 33:55
Sound: See below
Performance: A+

→ **Raw Power**, Iggy Pop's 1973 masterpiece, kick-started punk and changed rock 'n' roll forever. It was bigger than the lapels on a 1973 leisure suit, bigger than a 1973 record exec's dandruff flakes, bigger than a 1973 Caddy.

Heck, it was faster than a speeding bullet and more powerful than a locomotive. And even with its tinny, sludge-like, anemic, and weedy (as Iggy calls it) sound quality, that album never lost its immediacy or impact, especially for the diehards who carbo-load daily on its aggression as if it were some kind of rock 'n' roll Kryptonite that'll make them unbeatable against their adversaries.

The diehards are the ones who (if anyone) will dismiss this remixed and remastered—personally by Iggy—reissue. Sure, "if it ain't broke" and all that stuff, but *Raw Power*—originally mixed and mastered in a day—was "broke." This reissue, however, is aesthetically identical to the original, with the same rawness and power. The difference lies in a new, properly equalized mix that has a wider soundstage, more bass definition, and a lot more punch. Some instruments are more or less prominent, but ultimately this remix is a revelation.

Mike Bieber



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ty only proves the timelessness of Cheap Trick's incredible power pop.

Cheap Trick, the band's long-awaited new album, surges with emotion and power-pop hooks, but it's also injected with enough experimentation to prove that this group is just as relevant today as the latest cutting-edge alternative rockers. "Anytime," the opener, dynamically shifts between clean guitars over a shuffling backbeat reminiscent of The Afghan Whigs on the verses and a loud, overdriven chorus. But it's Robin Zander's signature vocal howls contrasted against catchy background harmonies that really propel the song. Other inventive gems are liberally sprinkled throughout. "Baby No More" is a speedy, mosh-tempoed cow-punk song driven by Rick Nielsen's raunchy guitars and Zander's snarling, attitude-laden vocals. "Eight Miles Low" is a sinister track powered by detuned riffs, sitar tones, and menacing background screams that sound like lost souls echoing from the grave.

Of course, Cheap Trick wouldn't be Cheap Trick without adrenaline-pumping power-pop sing-alongs. "Hard To Tell" will have you chanting the song's chorus (which could easily serve as the band's motto), "Life is hell, but I do it well," and "Say Goodbye" is a contagious, jangly cross between Big Star and Badfinger.

The album's only low points are "Shelter," a schamltzy but heartfelt ballad written to honor Nielsen's recently deceased parents, and the syrupy "It All Comes Back to You," which comes close to emulating a Neil Young torch song but ultimately fails. At their age, maybe Cheap Trick's players have a hard time keeping the tempos raging for too long without getting tired. But a couple of sluggish tracks is a small price to pay for the dynamic power of the group's return to form. Welcome back, fellas!

Jon Wiederhorn

Blur

VIRGIN 7087 12216, 56:59

Sound: B, Performance: A

Five albums into its career, crafty United Kingdom combo Blur has done the unexpected: withdrawn itself from the Brit-pop war that saw it going fist-to-fist with arch-rival Oasis. Damon Albarn and his boys have crafted a scratchy, reactionary record to commemorate their new beginning. Gone are the songs about quirky English eccentrics. Gone are the band's trademark glossy-skewed melodies; these have been replaced

by loose, dissonant structures that sound stripped down—almost primitive, like demo recordings.



S P A C E

Spiders

Universal UD-53028, 52:53

Sound: B, Performance: B+

Which black-and-white sitcom world would you rather inhabit, *Leave It to Beaver* or *The Munsters*? If you chose 1313 Mockingbird Lane, you'll appreciate Liverpool miscreants Space, whose creepy-crawly *Spiders* is as venomously fun as the album's cover art—a tub full of Mexican red-legged tarantulas.

The first track, "Neighborhood," gets things rolling with a spooky Middle Eastern castanet motif. The group's frontman, Tommy Scott—with a raspy, charismatic voice that's pure Ratso Rizzo—runs through a list describing all his twisted neighbors: "In number

69, there lives a transvestite/He's a man by day, but he's a woman at night" and "In 999 they make a living from crime/The house is always empty 'cause they're all doing time." This segues into "Mister Psycho," a hip-gyrating ode to a trigger-happy recluse. Next, on the tropical-flavored faux showtune "Female of the Species,"



Scott compares women to deadly spiders—black widows, in particular. Oddly, a jazzy piano on the song's bridge only adds to its subliminal tension.

Not every fluffy Space dirge is a winner. But there are enough oddities, including a ballad to Charles Manson, "Charlie M," to keep your Eddie Munster ears alert. No other band in the Brit-pop movement sounds remotely as weird.

Tom Lanham

Like the smart kid in school who can verbally slice class thugs to ribbons without ever getting beaten up, Albarn has been known to use a sneering vernacular to take shots at others' expense. Aside from the tongue-in-cheek "Look Inside America," he goes easy on the vitriol this time, instead cloaking his often nonsensical syllables in distortion. One of Albarn's few straightforward performances, "Death of a Party," turns out to be the album's most sinister sonic moment: a creeping-vine bass line sinews through a murky Hammond organ. Its subject matter, ennui morphing into potential suicide, perfectly complements the song's shadowy tone. By not overthinking the ingredients, Blur has achieved the desired uncomfortable effect.

And that's pretty much how the rest of *Blur* goes: snatches of crackling static ("Song 2," "M.O.R.," "Chinese Bombs") alongside fluid pop rivulets ("Strange News from Another Star," "You're So Great"). Strangely, the album never feels contrived. That accomplishment is clearly due to Albarn, one of the English scene's cleverest pop pundits. Longtime followers may want to wallop him for derailing a familiar institution. But Albarn isn't cowering in fear; he's laughing heartily at his outfoxed pursuers.

Tom Lanham

The Beauty Process: Triple Platinum

L7

SLASH/REPRISE 46327, 41:40

Sound: B, Performance: B+

Still getting a visceral kick from the simple thrill of hearing its own amplified voices on tape, L7 kicks off its fifth album with a mike

check ("Yo! Hello! Hey!") followed by two ear-shattering screams. The Los Angeles quartet has always had a hard time being heard for exactly what it is: a great punk-metal band, as opposed to a great female punk-metal band. But the group doesn't waste any more time making that point on *The Beauty Process*: Triple Platinum than it has on its previous four albums, choosing instead to get right to the business of making your eardrums ring.

L7 suffered a key defection before making this album: Bassist/vocalist Jennifer Finch quit, perhaps frustrated by a decade of hard touring that has won the band a cult following and not much more. But guitarists/vocalists Donita Sparks and Suzi Gardner rose to the occasion with producer Rob Cavallo (Green Day, The Muffs). With stomping rhythms and slower tempos (though not extraneous guitar solos), they tip the balance a bit more toward the metal end of the spectrum while maintaining their usual so-stupid-they're-brilliant Ramones-style hooks.

The subject matter will be familiar to fans: Sparks and Gardner bitch about loser boyfriends and other "Bad Things," celebrate their status as bad girls by jumping "Off the Wagon," and show their romantic streak on the touching, '50s-style "Moonshine." Through it all runs a message of self-reliance: To quote one memorable passage, "Me, myself, and I will never be lonely/As long as I stick together like glue/Without you."

Sadly neglected in a pop landscape dominated by lightweights such as Alanis Moris-



sette and Sheryl Crow, L7 can be forgiven for being bitter and questioning the IQ of the populace at large in the song "The Masses Are Asses." Ultimately, this band is about partying hard and rocking yourself silly, and it's your loss if you decline to join in. *Jim DeRogatis*

The Pawn Shop Years

Buick MacKane

RYKODISC RCD 10361, 42:58

Sound: B, Performance: B+

Guitarist/singer/songwriter Alejandro Escovedo's richly varied musical background includes stints with San Francisco's seminal punk band The Nuns and a '90s solo career that saw the release of several critically acclaimed albums. On the debut effort from his new band, Buick MacKane (which started out as a loose aggregation in 1989), Escovedo rocks with undeniable fervor. This is a high-octane, turbocharged power-pop outfit, fueled by Escovedo's and Joe Eddy Hines' raucous guitars and the driving rhythm section of



David Fairchild on bass and Glenn Benavides on drums.

Although it hails from Austin, Texas—a town whose music scene is largely populated by blues-based strutters and country-rock troubadours—Buick MacKane is a pure rock band like they used to make them. Beginning with "The End," *The Pawn Shop Years* is all pedal to the metal. There's no pretension here, no disaffected attitude—just good, loud fun. Buick MacKane's sense of humor shines through in "John Conquest, You've Got Enough Dandruff on Your Collar To Bread a Veal Cutlet," and the dual-guitar interplay in "Black Shiny Beast" and "Big Shoe Head" is greasy enough to keep a deep fryer at McDonald's full for a month. *Chris Gill*

Straightaways

Son Volt

WARNER BROS. 9 46518, 40:27

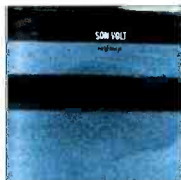
Sound: B+, Performance: B+

The demise of alternative rock has spawned a renewed interest in traditional rock 'n' roll values. It's hard to imagine a band that better embodies those values—astute songwriting, engaging hooks, economical arrangements, natural harmonies, surefooted musicianship, and no-fuss production—than Son Volt, the Midwest quartet led by ex-Uncle Tupelo principal Jay Farrar.

On *Straightaways*, Son Volt's second album, the band plows the down-home country and heartland rock that it sowed on 1995's *Trace*. Wistful cowboy ballads ("Left a Slide," "Cresosote," and "Last Minute Shakedown") shim-

mer with pedal-steel filigree and sway like sour-mash sunsets, while others ("Caryatid Easy," "Picking Up the Signal," and "Cemetery Savior") kick up dirt with roadhouse abandon.

Yet for all the directness of Son Volt's music, Farrar's lyrics are surprisingly oblique, not unlike the fractured phrases and disjointed imagery that Michael Stipe used on early R.E.M. albums, such as *Murmur*. *Straightaways* evokes R.E.M. in other ways, too, particularly in the Byrds-like jangle of "Back into Your World" and the nasal mumble of "No More Parades." Unlike R.E.M., though, Son Volt isn't concerned with transcending traditional rock values but with refining them—which is both its weakness and its greatest strength. *Greg Siegel*



Perfect from Now On

Built To Spill

WARNER BROS 9 46453, 54:16

Sound: B+, Performance: A

Contrary to popular belief, guitar rock is not dead. Sure, many commercial acts have watered it down mercilessly. But beyond the mainstream, bands such as Sebadoh, Pavement, and Built To Spill are using flailing guitars and unconventional song structures to express powerful emotions.

Even though Built To Spill's *Perfect from Now On* is from a major label, the band retains its indie aesthetic. None of the songs here have traditional verse/chorus arrangements or are of the radio-friendly, three-minute variety. Instead, frontman/guitarist Doug Martsch crafts sprawling, tangled music that draws from the loose, free-form feel of '60s psychedelia and the multifaceted textures of '70s prog-rock. Rhythms change frequently and without warning, as guitar tones build from pensive to aggressive, with unearthly celos reverberating in empathy.

Instead of wielding his guitar to flaunt his strengths, Martsch uses it to expose his frailties, plucking, strumming, and hacking out volleys of sound that express insecurity and self-doubt. His lyrics are equally confessional. On "Untrustable/Part 2 (About Someone Else)," he sings, "You can't trust anyone cuz you're untrustable/How can you trust someone you know can't trust you?"

But despite the introspection, *Perfect from Now On* isn't geeky rock. Alluring melodies are sublimated deep inside these songs. Once you find them, everything else shifts logically into place. *Jon Wiederhorn*



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Beyond the Missouri Sky
 Charlie Haden and Pat Metheny
 VERVE 314 537 130, 69:31
 Sound: B, Performance: B+

Guitarist Pat Metheny tends to sound more inspired as a sideman than he does as a leader.

His own albums have become increasingly predictable and radio-friendly. Compare the sheer, unbridled passion Metheny displays on Kenny Garrett's *Pursuance: The Music of John Coltrane* with his own syrupy *Secret Story*. Or his astounding legato burn on Roy Haynes' *Te Vou!* and Michael Brecker's Grammy-winning *Tales of the Hudson* versus his own tepid *We Live Here*.

Metheny's latest album, *Quartet*, deserved its critical praise, but his 1986 collaboration with Ornette Coleman, *Song X*, is far more daring and *Beyond the Missouri Sky*, an acoustic duet with bassist Charlie Haden, is far more sublime.

Give Metheny credit, though, for placing himself in risky situations, despite his various hits and misses. But there is nothing dangerous about *Beyond the Missouri Sky*. The melodies are memorable, pleasing, and rendered with an abundance of soul by these two Missouri natives. Pieces like Haden's "First Song," Henry Mancini's "Two for the Road," and Jimmy Webb's "The Moon Is a Harsh Mistress" ooze a relaxed magic that charms as it soothes. Other inspired covers include an ebullient reading of Roy Acuff's country tune "The Precious Jewel" (underscored by Metheny's

vigorous acoustic strumming), a subdued rendition of Johnny Mandel's "The Moon Song," and an intriguing take on Ennio Morricone's main theme from the film *Cinema Paradiso*.

In "Tears of Rain," Metheny unveils a new acoustic guitar/sitar acquired just before the recording session. And he reveals a tender side on the traditional "He's Gone Away," one of his simplest and most lyrically profound moments on record. Haden and Metheny close the disc on an uplifting note with "Spiritual," written by Haden's son Josh, and it's a fitting conclusion to one of the most beautiful collaborations this year.

Bill Milkowski

Angel Song

Wheeler/Konitz/Holland/Frisell
 ECM 78118-21607, 70:04
 Sound: A, Performance: A

Jazz has always been deeply romantic, from Ella's vocals and the ballads of Coltrane to the way each member of an ensemble frolics with the others. *Angel Song*—with trumpeter Kenny Wheeler, alto saxophonist Lee Konitz, bassist Dave Holland, and guitarist Bill Frisell performing Wheeler's compositions—captures this romance impeccably. Each composition offers some rarefied element of beauty, be it a sultry melodic passage or a lovely solo turn. This is especially evident with Wheeler's trumpet on the *Sketches of Spain*-like "Kind Folk"; Frisell's lovely, stargazing rhythm on "Unti"; Holland's warm interlude on "Onmo"; and when Wheeler and Konitz seem to merge their instruments on the brief but lovely "Nonetheless." A largely improvised outing, *Angel Song* is one of the most heartfelt jazz releases of the year. This album is a stunning, satisfying listen.

Bob Gulla



Just Found Joy

The Rich Corpolongo Quartet Plus Two
DELMARK DE-489, 65:23
Sound: A, Performance: A

Multi-reedist Rich Corpolongo has been playing jazz in Chicago for nearly 40 years. *Just Found Joy*, however, marks his debut as a leader. Although his previous obscurity was unfortunate, it benefits Corpolongo here, as he pours years of experience and passion into this session. The eight originals presented—including soft soprano-sax- and alto-sax-driven ballads, a clarinet-led blues number, a barn-burner, and some pieces with quirky personalities—reflect this. But *Just Found Joy's* success is fueled by more than the excellence of its compositions.

Corpolongo's quartet—pianist Larry Luchowski, bassist Eric Hochberg, and drummer Mike Raynor—are creative, skilled, and well tuned to each other. It's evident in the way they slowly build the light, tumbling groove on "La Blues," the most memorable tune. Each man knows his place. Hochberg, for example, plays lyrical bass lines without infringing on Corpolongo's punchy impromptu clarinet cries. But throughout the album, it's Corpolongo who impresses the most. His sound is so engaging that it's easy to ignore the other performers. On the closer, "The Way It Is," the quartet is joined by violinist Jeff Czech and percussionist Paul Wertico. The album's most adventurous tune, it moves through several sections that include a rewarding free-jazz conversation. *Just Found Joy* indeed. *R. Dante Sawyer*

Chö

Choying Drolma and Steve Tibbetts
HANNIBAL HNCD 1404, 49:27
Sound: B+, Performance: B+

A Tibetan nun living in the foothills of the Himalayas, Choying Drolma sings the sacred chants of Vajrayana Buddhism, a musical tradition dating back 11 centuries. On *Chö*, Steve Tibbetts—a Minnesota-based guitarist known for his hallucinogenic guitar, folk phrasings, and world percussion—steps into this ancient music.

He has taken recordings he made of Drolma and other sisters in the Nagi Gompa nunnery and framed them with subtle orchestrations of acoustic and electric guitars, percussion, strings, and French horn.

While techno, hip-hop, and ambient musics routinely sample and manipulate record-

ings of exotic voices, Tibbetts has left the chants fairly unadulterated. Instead, he imbeds these serene hymns and Drolma's vulnerable, impassioned voice within whispering guitar melodies, ambient shadings, and ceremonial-trance percussion.

With *Chö*, Tibbetts has created a virtual shrine, a resonant and sensual space that gives us a glimpse of what it might be like to hear the nuns in their own environment. Wisely, he doesn't attempt to replicate the experience. *John Diliberto*

Dexter Gordon: The Complete Blue Note Sixties Sessions

BLUE NOTE 7243 8 34200, six CDs; 7:02:06
Sound: A, Performance: A

As the first to translate alto saxophonist Charlie Parker's be-bop style to the tenor saxophone, Dexter Gordon (who died in 1990) became an icon on his native West Coast in the 1940s. He spent most of the '50s, however, battling drug habits and serving prison time while a newer, younger crop of West Coast musicians, which included Chet Baker and Gerry Mulligan, eclipsed his popularity. It would take Gordon's four-year recording relationship with Blue Note (1961-65) to put him back in the jazz limelight.

Gordon's long, loping phrases and larger-than-life sound were his hallmarks. A laid-back rhythmic approach strategically placed key notes slightly behind the beat. Unlike later, when his playing was so relaxed it could lull you, he swings hard on the Blue Note recordings (often at medium uptempo) and always displays a technical mastery of his instrument. With an outstanding pool of musicians—including pianist Sonny Clark, bassist Paul Chambers, drummer Philly Joe Jones, and trumpeters Freddie Hubbard and Donald Byrd—Gordon also waxes poetic on a number of beautifully performed ballads.

As the letters between Gordon and Blue Note's Francis Wolff and Alfred Lion (included here) reveal, Lion was always planning ahead, always considering the most appropriate repertoire for Gordon and arranging to get the very best sidemen. This thoughtfully designed, six-CD boxed set contains nine albums, including the classics *Doin' Alright, Go, A Swingin' Affair, Our Man in Paris*, and *Clubhouse*, plus nine previously unissued tracks. *The Complete Blue Note Sixties Sessions* is a classy presentation of a very important and exciting body of work. *James Rozzi*



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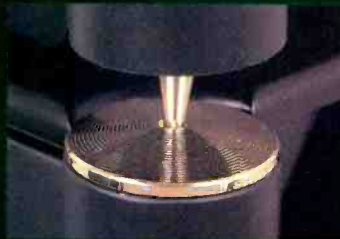
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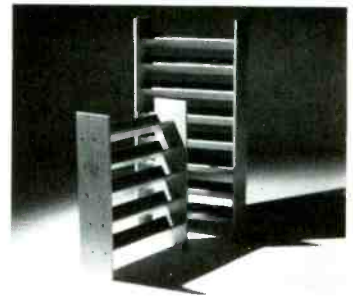


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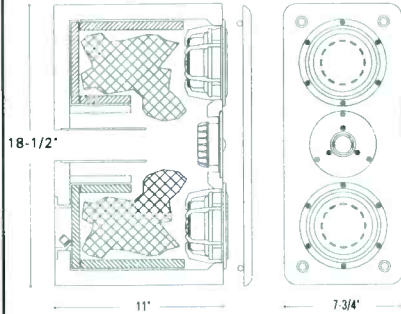
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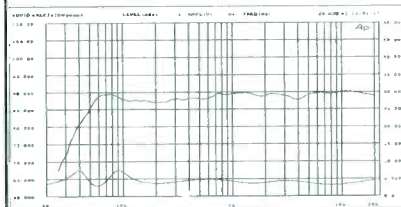
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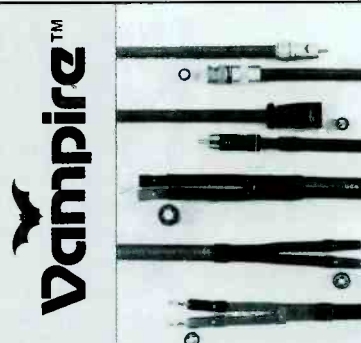
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PlayBack

VELODYNE VA-1215XII POWERED SUBWOOFER

The Velodyne VA-1215XII qualifies as a best-buy subwoofer. Although it does not go quite as low as its servo big brothers, this \$999 sub's performance and features make it a sleeper for home theater or music. The bass, which is said to reach 22 Hz, is delivered by a video-shielded, 12-inch front-firing active driver (55-ounce magnet, 2-inch voice coil), which is augmented by a 15-inch bottom-mounted passive radiator. The VA-1215XII is equipped with a more than ample 250-watt, Class-AB amplifier. The enclosure is 19 inches high and has an 18 x 20-inch footprint. The system weighs 67 pounds.

The VA-1215XII includes a defeatable crossover whose low-pass filter is adjustable (40 to 120 Hz) and high-pass filter is selectable (80 or 120 Hz). Its phase control is continuously adjustable from 0° to 180° (a rarity), and it has an auto-on/continuous-on power switch and a switchable audio/video loudness boost.

In my home theater, I could not quite get to 22 Hz within the rated 3-dB tolerance, but I did get 25 Hz without audible distortion at levels up to more than 100 dB. With the Dolby Digital low-bass effects in *Outbreak*, *Star*

Trek: Generations, and *Die Hard with a Vengeance*, this subwoofer rattled the windows without sounding muddy. By the way, I can't praise the defeatable crossover enough. Using both your processor's

crossover and a subwoofer's can degrade performance.

I can't say enough good things about

this subwoofer. (Velodyne Acoustics: 1070 Commercial St., Suite 101, San Jose, Cal. 95112; 408/436-7270.)

John Gatski

GRADE: A+

For literature, circle No. 120

WESTLAKE AUDIO Lc 8.1 SPEAKER

Westlake Audio's Lc 8.1 is one of the best bookshelf-sized speakers I have ever heard. Although not inexpensive (\$1,699 per pair), this monitor definitely derives its accuracy from the pro speakers that Westlake has produced for years.

Available in satin walnut or satin black, the Lc 8.1 contains an 8-inch woofer and a 1-inch tweeter with a coated cloth dome. The cabinet (18 x 10 x 12 inches) is ported, and the woofer is forward of the tweeter to maintain time coherence. The attractive grilles are removable.

I auditioned the Lc 8.1s through a couple of systems, and, boy, were these speakers revealing! I settled on a CD player, tube preamp, and my vintage McIntosh MC275 amp for most of the listening. Detail on jazz recordings and bass extension on all kinds of music certainly caught my attention. It was hard to believe that these were only 8-inch woofers, because they provided such tight, low bass—even when driven with a tube amp.

I could only criticize one feature: The speaker binding posts do not open very far to accept bare cable ends. (The company recom-

GRADE: A

mends against bare-wire connection.) Still, the Westlake Lc 8.1s' sonic impression prevented me from lowering the grade. I really liked these speakers. (Westlake Audio: 2696 Lavery Court, Unit 18, Newbury Park, Cal. 91320; 805/499-3686.)

John Gatski

For literature, circle No. 121



LYLE CARTRIDGES PHONO ALIGNMENT TOOL

Phono cartridges need to be aligned correctly to minimize distortion. Lyle Cartridges' Phono Alignment Tool provides a quick and inexpensive (\$15.95) way to do this. It's a simple device, a small plastic mirror that has calibration marks on its surface and instructions printed on its back. After mounting a cartridge in your tonearm (without tightening the screws), you place the alignment tool on the turntable spindle. Then you adjust the cartridge so that its sides are parallel with the perpendicular lines on the tool when the stylus is resting on marked points at the centers of the two grids printed on the mirror. The hole in the tool was too small for the spindles on my turntables, so I used a pocket knife to enlarge it. Other than that, the Phono Alignment Tool was simple to use. The instructions might be too concise for some people, and it would be nice if Lyle included a more complete explanation of the tool's benefits. Overall, however, I commend Lyle for making such a useful device for those of us who still play LPs. (Lyle Cartridges: 115 South Corona Ave., Suite 8, Valley Stream, N.Y. 11582; 800/221-0906.)

Edward M. Long

GRADE: B



For literature, circle No. 122



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SONY

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Lawrence B. Johnson
Stereophile Guide to Home Theater, Vol.1, No.1, 1995



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So, it’s your choice. You can demand the “state of the art” cable brand built by the world’s leading cable manufacturer, or you can settle for second-rate brands from other cable suppliers that are made by someone else in somewhere unknown. Lawrence Johnson chose Esoteric Audio for his system. You should for yours. Available at premier audio retailers in your area. Call us for your nearest one.



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