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NOVEMBER 2000

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Not too long ago, the word “convergence” had everyone in the High End ready to duck’n’cover. Asia was on the ropes, and a shakeout was thinning the ranks of high-end audio manufacturers. Some US companies were marketing and selling most of their output to the Pacific Rim. The writing was on the wall: High-end was dead, and we’d all just better get used to listening to music on our computers.

Some audio dealers ran for cover in home theater. “Yeah, high-end is dead; home theater, *that’s* the ticket! I can pay for the kid’s braces *and* the Mercedes this way! No one cares about music anymore!”

At about the same time, the great Internet tide washed in. Dot-coms proliferated like mushrooms; *everything* was a commodity, including our precious high-end components. Every week on www.stereophile.com you could read about the frantic rush to get online. Bricks’n’mortar were out—all anyone needed to put together a system was a mouse and a credit card. Even staunch manufacturers who’d protected their dealers from mail-order predators (the Net is just one huge mail-order pool, isn’t it?) folded their ideals and forged online alliances. The lure of Net commerce was just too tempting to resist.

Coolaudio.com, for example, exploded onto the scene and shot up big and splashy. To Wilson Benesch and Chord, two worthy UK high-end audio brands that had found it difficult to break into the US market, Coolaudio seemed the perfect solution—worldwide distribution, bricks’n’click. They signed up, but paid the price when this colorful dot-com start-up went down in flames, their equipment dumped for pennies on the dollar on eBay.

But time flies, and today we see a different, and healthier, audio landscape. “Convergence” has come to mean much more than it did even a short time ago, and without all the negative vibes, man. While everyone is still striving to integrate entertainment systems into their busy lives, there isn’t the

same *intensity* to do everything with one system. There’s such a diversity of preoccupations out there, and so many ways of satisfying one’s lust.

Happily, as we all learn more about how to bend the Information Age to our own best interests, we also learn how to go more deeply into those pastimes that inspire our passions. Rather than becoming more shallow, we’re actually learning to once again become a society of connoisseurs, more *Iron Chef* than *Survivor*. We have the choice, we indulge in both, but there’s a reason *The Antiques Roadshow* has become such a hit on PBS.

**If high-end audio
dealers don’t go with
the flow and cultivate
new customers,
they’ll wither on
the vine and die.**

Indulging in both—that’s the key. Dad goes into a specialty audio-video store looking for a home-theater system. But maybe the dealer hooks another aging Boomer with what he or she knows best—two-channel audio—*then* leads ‘im into the HT demo room. *Walk this way...* Or maybe the other way around: You’re looking for an audio upgrade and wind up watching a movie that takes your breath away in surround. Hey! I’ll take one of these *and* one of these! *That’s* convergence!

So what happens in this new scenario? Papa Bear invests in multichannel home theater and knows where the kids are on weekends. And while Bud and Sis are watching *Chuck & Buck* or *Cecil B. Demented* on the rilly big screen, Dad yo-de-does into the library, slams the door, and fires up the ol’ two-channel system to settle in with some Haydn piano trios or a dose of The Three M’s: Monk, Miles, and Mingus.

The difference between audio and

home theater is that they’re two distinct types of purchases. Surround systems are often bought in one huge orgy of spending. Get that big screen and 5.1 channels of front-end source, amplification, and speakers, and lay it all in. The novelty factor is high, the explosions are entertaining (in the short run), and the convenience is outstanding. There’s a family factor too: Cuddling up with the wife and kids is fun as well as entertaining. Bond with your boy watching *The Art of War!*

Audiophiles are different. They’re seekers, always looking for that special contact with the music, and thus, arguably, with themselves. It’s a process, while home theater is an event—or a series of discrete events, if you will. What you “see” when listening to music is in your imagination; *work* those brains! But home theater requires little real effort—you just have to lie there like a dead lox and let it all wash over you, with an occasional twitch or grunt. Perhaps that’s why the scuttlebutt has it that Sony wants you to own more than one machine. It’s an interesting scenario: a more costly two-channel SACD player for music, and a DVD-Audio machine for movies and everything else surround.

And that’s why, I’m convinced, bricks’n’mortar audio salons have another chance to make themselves relevant. Since newly bankrupt dot-coms are falling out of the trees, and since 200-lb monoblock amps and turntables never became commoditized, the dealers have one more golden opportunity to offer a truly value-added shopping experience, to make a visit to their emporia worth your while. If they don’t go with the flow and cultivate new customers, they’ll wither on the vine and die. *Force* them to serve you (what a situation!); *haunt* your local dealer; get in there as often as possible and audition equipment ‘til the cows come home before making a purchase. And follow your instincts! Use that demo time to develop your ears. The dealers are takin’ your money—make sure they earn it!

Convergence, yessir; it’s not just for breakfast anymore! ☒

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SB-T300
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Mamoru Takahara
Shot Live at Kioi Hall
Tokyo, Japan



SA-DA10
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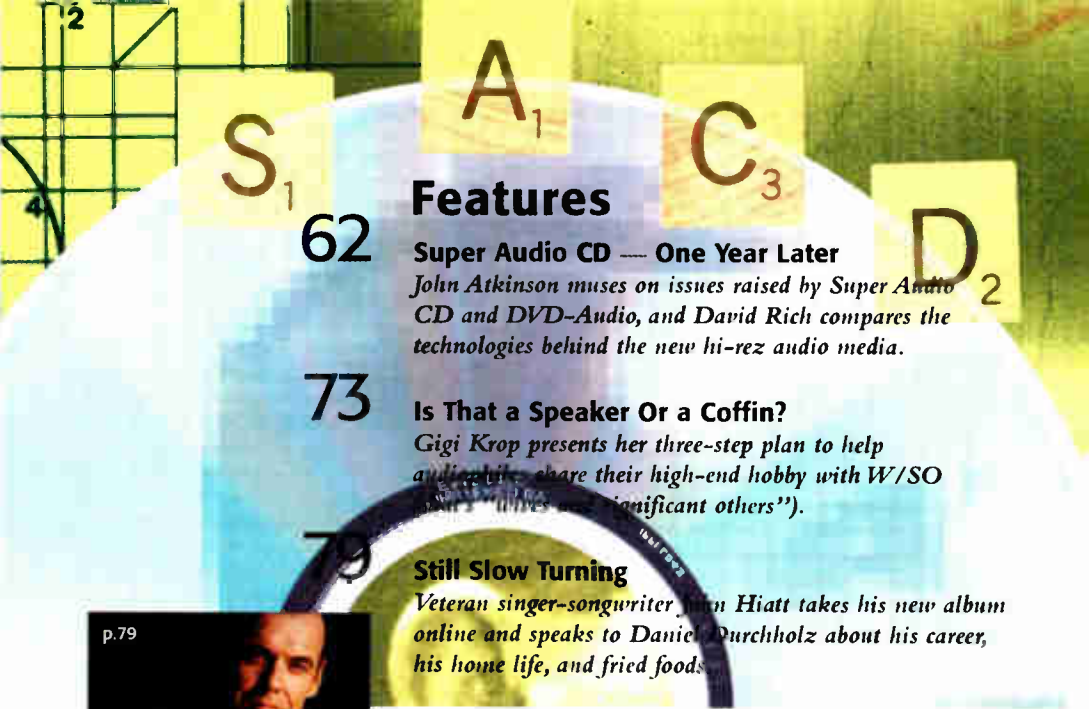
Mamoru Takahara approaches the podium, a living bolt of musical energy. He lifts the baton and the musicians of the New York Symphonic Ensemble snap to attention. Then, suddenly, it begins: the melding of individual talents into one, powerful musical force. From the sweetest violins to the thunderous timpani, Takahara's passion with the music becomes your own. If you can't be there to witness this phenomenon in person, we want you to hear it as if you were. With our newest Technics DVD-Audio/Video player and DVD-Audio Ready components, you can.



DVD-A10
DVD-Audio/Video Player



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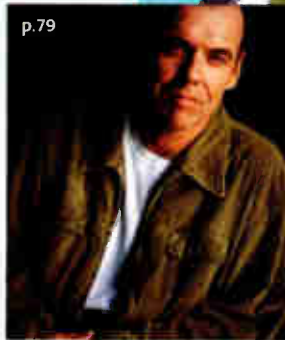
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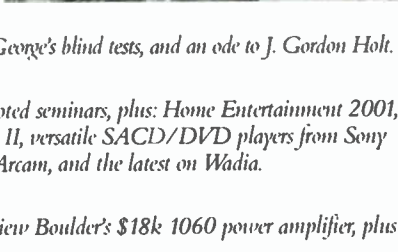
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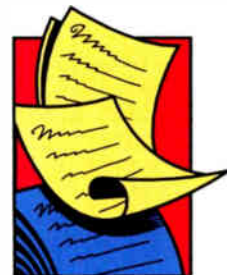
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Letters

More classical

Editor:

More reviews of classical recordings, both new and historical, please. *David Rapkin
Adelaide, Australia*

More Bill Evans

Editor:

In the September 2000 issue, Thomas Conrad states that Bill Evans "recorded prolifically, but he never made an album with good sound." It may well do Mr. Conrad to give a listen to Bill's *Tokyo Concert*, recorded live on Fantasy (Original Jazz Classics OJCCD-345-2), and to his Warner Bros. recording *You Must Believe in Spring* (3504-2). *The Tokyo Concert* was recorded in 1973 and remastered in 1990 by Phil De Lancie. The Warner Bros. recording was recorded in 1977. Both are readily available and deserve his critical evaluation.

Generally, the reviews of Thomas Conrad are well accepted here, but I think he missed out on these two recordings. *Bill Gardiner
jwgardiner@home.com*

Wrong hypothesis

Editor:

The letter from John Hovar published in the September 2000 *Stereophile* presents a completely spurious argument for cable directionality. It is amazing how often audiophiles adopt beliefs that are so easily refuted by well-known elementary physics.

Mr. Hovar suggests that using a cable in a unidirectional manner to deliver power from a source to a load proves that cables could be sensitive to that direction. If you speak to someone through a long pipe, and the person at the other end only listens and never speaks, does that make the pipe directional? Of course not! A uniform conductor cannot be directional, regardless of the way it is used. Only a physically measurable nonuniformity can account for directionality. *Mike Demler
demler1@surfnetusa.com*

Wrong address

Editor:

At the end of Barry Willis' "Industry Update" article on the copy-protection and watermarking specification for DVD-Audio (September, pp.17-19), the correct Web address should be www.4centity.com/index.html. I tried the published URL, which didn't work. This one works. *Phil Pat Karsch
pkarsch@fiber-net.com*

Wrong picture

Editor:

As you are no doubt aware, the Cambridge A500 amp on p.29 of the September 2000 issue looks remarkably like the Cambridge D500 CD player on p.30. If one were to purchase both, how would he tell them apart?

*Danny Howard
dfhoward@worldnet.att.net*

Keep up the good work

Editor:

Ah, the irony! Sam Tellig's review of the Cambridge Audio A500 integrated amplifier begins: "The Cambridge Audio A500 doesn't look like much." Hell, it doesn't even resemble an amplifier!! Is the large knob on the right the output control? Does the green digital display indicate transient power output? Is the door on the left hiding tone/equalization controls? Could you send me a unit for free to audition in my own home?

Anyway, keep up the good work, *Stereophile* (ie, reviewing equipment I'll never be able to actually buy, but enjoy reading about). *Paul W. Eichenberger
Louisville, KY
Peichenberger@spalding.edu*

To keep the Quark XPress files of the articles to a manageable size when we prepare the magazine, we use low-resolution place-holder scans of photos. High-resolution images are then substituted in as part of the pre-press process. In this case, the photo

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of the Cambridge CD player was stripped in twice, and we failed to pick up the error in the final "blue-line" proofing. Sorry. —JA

The long-overdue review

Editor:

Thanks for starting a series of reviews of PC soundcards. It's long overdue, as PCs are used by many of us to create and burn CDs. Most of the Soundblaster stuff is focused on games, not sound quality; kinda like comparing hi-fi to home theater.

I also enjoyed September's review of the Marantz SA-1 Super Audio CD player; however, I regretted the absence of information on how well the unit played standard CDs. As long as the SACD market is growing so slowly, most of us will spend lots more time playing our "old" CDs instead of SACDs, based on availability, not choice. I'm sure that upsampling standard CDs to 192kHz is a hoot, but since upsampling units are not yet common, we would benefit from a comparison of the SA-1 to standard CD players.

*Vade Forrester
San Antonio, TX
vforrester@satsx.rr.com*

A minor quibble

Editor:

Just a minor quibble: in JA's September review, he made it sound like the Digital Audio Labs CardDeluxe PC soundcard is the first that is capable of 24/96 resolution. I think he should feel obliged to correct this (slight) misrepresentation to his admiring readers.

And if what he meant to represent was that it was the first such card worthy of recommendation due to its fidelity, I do not think that that particular point came across in the review. It would have been nice to see competing components, and how the DAL fared against them.

*Peter Priskekin, aka "Dusty Chalk"
dusty@patriot.net*

There are others

Editor:

I was disappointed to find no mention of comparable cards, of which there are many, in John Atkinson's review of the Digital Audio Labs CardDeluxe. The cover photo also gave the unfortunate impression that the DAL card is unique; it is not. Please see *Electronic Musician*, *EQ*, and *Mix* (among others) for numerous ads and reviews of 24/96

computer audio interfaces. There are also several multichannel interfaces that offer eight or more channels of 24/96 audio I/O for around \$1000.

David Espinosa
Palo Alto, CA
espinosa@kestrel.edu

Use the right drives

Editor:

In his review in September of the Digital Audio Labs CardDeluxe PC soundcard, JA experienced his hard drives dropping files. What you need is not specifically high-rpm drives, as he mentioned, but AV-compliant hard drives, which don't perform thermal recalibration when being accessed.

Michael Mai
mainichael@hotmail.com

See my review of the RME Digi96/8 Pro sound card and my Follow-Up on the CardDeluxe elsewhere in this issue. —JA

They come back

Editor:

Another letter from another "holier than thou" individual (Kelly Johnson) in the September issue got my attention. Kelly wanted an apology for "your" blatant overuse of the "F" word in the July issue or he would cancel his subscription. I admire you for standing your ground and not apologizing; if you're quoting someone, including their lyrics, and the "F" word is used, then that's what you write. To quote H.L. Mencken: "I am unalterably opposed to all efforts to put down free speech, whatever the excuse."

And as for Kelly canceling his subscription, well, bear with me as I tell you a short story.

Several years ago I wrote a letter to *Stereophile* which was published. No need to rehash the old, but basically I agreed with Larry Archibald and also defended his right to write whatever he wanted. Not long after, I received a letter from an individual who read my letter, ranted and raved in a rather incoherent fashion, and achieved literary greatness by calling me a "Horse's ass!"

The interesting thing is that this individual proclaimed to me that he had canceled his subscription to *Stereophile*. But somehow he managed to get a copy of *Stereophile* and read at least the "Letters" section, and probably a few of the articles! They may cancel, John, but somehow or other, when no one's looking, they're still reading every issue of the magazine!

Assuming that Kelly, the purest of the pure, cancels his subscription, I have extended my subscription for another year so you lose nothing. If anyone doubts me, I will send them a copy of the canceled check showing payment for the subscription extension. One caveat: They have to show me a canceled check for the price of a subscription

extension (\$11.97) made out to the American Cancer Society.

Joseph (Joe) Michael Cierniak
Editor/Publisher, Sound Off Magazine
soundoffmagazine@aol.com

I've come back!

Editor:

Hey, I'm back, thanks to Uncle Mikey F. Even bought myself a Rega Planar 25. CDs are for sissies, right, Mr. F? Renewed my subscription to *Stereophile* and started listening again. Why, you ask?

I discovered rock'n'roll via flea-market and yard-sale finds. I got high-end sound—muddy and loud, scare the dogs and wake the neighbors—from a 1970s Pioneer SX1250 receiver and old Infinity Quantum speakers, teamed with an old Linn LP12 (zero updates). Hi-fi is fun again.

Mikey is the first thing I read every month. Keep him!

Ken McMurry
Framingham, MA

Best blast for the buck

Editor:

I want to thank the folks at *Stereophile* for their efforts at reviewing and recommending inexpensive equipment. Following the suggestion in last April's "Recommended Components," I am sitting in my office listening to Wynton Marsalis' *Blue Interlude* on a Denon DM-3 and a pair of Mission MS-5 speakers. This system is a blast! It's been here for a couple of days and I've never been more eager to be at the office. It kind of interferes with work, though.

Yesterday, Jascha Heifetz gave a concert with Charles Munch and the Boston Symphony (Beethoven's Violin Concerto and Mendelssohn's Violin Concerto in e, Op.64, on RCA Living Stereo). I just could not concentrate on my work. Great music, beautifully played; moreover, this little system makes it sound like music.

I took another of your low-budget suggestions from "Recommended Components" and pulled out some old RadioShack 12-gauge copper speaker cable that I had sitting around. It barely fit into the hole in the binding posts (not to mention the little "guillotine" connectors), but the improvement was immediate, worthwhile, and free, since I already had the cord.

Thanks for your efforts. You can bet that my office is the best-sounding place in the college where I work.

William H. Harrison
Saskatoon, Canada
bill.harrison@usask.ca

Kudos

Editor:

I haven't written in a long time, partly because I have been waiting to see what would become of my beloved *Stereophile* magazine with all the changes. It looks like things will be all right!

Kudos for retaining the Audio Cheapskate, or whatever Sam Tellig is known as these days. We aging baby boomers are facing tuition bills and the like, and it is nice to read about affordable equipment that still plays music. Sam was responsible for my purchase of the venerable B&K ST-140—a great amplifier in its day—and I still have the NAD 3020 integrated amp I found in a consignment shop for 50 bucks!

I enjoy "Fine Tunes" by Jonathan Scull. The small things *do* matter, and sometimes an inexpensive change can make a large improvement—Quiet Line filters come readily to mind.

I'd like to pass along a discovery of my own. There is an insulation product called Reflectix, which is bubble pack sandwiched between aluminum foil, used in buildings to control radiant energy. I bought some at Menards when I built a sauna in my basement; it comes in rolls of various sizes and is quite inexpensive. Cut this stuff into sheets the size of your shelf and place it under components prone to pick up vibrations. You get the benefit of some RF shielding as well. It does a great job at a bargain price.

I also want to applaud your negative review [of the Richard Gray's Power Company AC filter]... Thanks for "calling them as you see them."

Gregory Campbell
Hancock, MI

No fun left in audio?

Editor:

Between you guys and the snot-nose, shit-head dealers out there, there's not much fun left in audio. You have turned a quality magazine into a piece of crap. It's just a political exercise between *Stereophile* and its advertisers. All the best writers have left. Scull is nothing but a fat idiot trying to get expensive equipment to use for free. Your website is a joke.

The Absolute Sound is becoming what you guys could have been: a serious audio journal for people who take their investments seriously. You just want to sell me more magazines and junk. No thanks.

Allan Rosenzweig
allrose@bellsouth.net

Be thankful

Editor:

It never ceases to amaze me how *Stereophile* gets bashed with negative letters. Don't worry, this is not one of them; I have only positive things to say.

First, I am glad that *Stereophile* offers a great price spread when it comes to reviewing and, yes, recommending components. Let me explain. Some readers say *Stereophile* does too many budget reviews, while others say there are too many components reviewed where the same money could buy a home or a nice car or maybe fund the kids' college tuition. To these people I say, Get a life! *Stereophile* does a great service to its readers, whether they are

N° 383
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the top 1% wage earners or an average person like me. One look at the "Recommended Components" section is a quick and easy way to see how good *Stereophile* is at reviewing products in all price ranges, from \$500 CD players (high-end players at that) to \$100,000 loudspeakers. Hey, I don't mind reading equipment reports of expensive equipment—we can all dream, can't we?

Second, I am thankful for the "Fine Tunes" tips on how to improve my system performance. No, I have not done any of that stuff yet, but I will soon do so. Glad I have friends out there.

And when is there going to be a review of a DVD-Audio player? Can't wait to read the review!

David Mathis
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Jonathan Scaull's review of the Technics DVD-A10 player appears in this issue, Mr. Mathis. —JA

Super Audio CD will win

Editor:

Stereophile. It's like my marriage: Even though I'm a long-term subscriber, I greet every issue with anticipation and pleasure. Please keep educating and entertaining us.

Here's my take on the audiophile format war:

The 16-bit/44.1kHz PCM recordings on CD can't be adequately improved with up-sampling, oversampling, HDCD encoding, or even scratch'n'sniff labels—there's just not enough *there* there. The DVD-Video-based 24/96 DAD (Classic) and SAD (Chesky) discs are wonderful but scarce. This *seems* nonsensical, given the large inventory of 24/96-capable players sold. But it's a catch-22. Skeptical record companies are conserving titles for release on a format with momentum, which no format can acquire without titles. The DVD-Audio format will require substantial listener investment in new processing and loudspeaker equipment, home-theaterphiles included. It will also require a brand-new six-channel recording inventory worldwide—are you holding your breath yet, waiting for this lead zeppelin to float?

Enter Super Audio CD. Sony owns an enormous inventory of titles, already archived for years in SACD's DSD format. Yes, you'll need a new player, but speakers, preamp, surround processor, *et al* remain the same. SACD sonics are super—24/96 quality or better. And initial software is promising in quantity and quality—Bruno Walter, Leonard Bernstein, Vladimir Horowitz, Charles Mingus, and more on Sony, Telarc, Water Lily, Delos, Hyperion, AudioQuest, DMP, and more. Other companies will join them shortly. I have heard that additional pressure is being applied top-down from major-label artists who like the way they sound on SACD.

Over the horizon are cheaper combi players (CD/DVD/SACD). Add affordable hardware to proliferating software, and resistance among audiophiles will collapse. Perhaps 50,000 North American customers will begin buying SACD (a guess, based on the 70,000+ circulation of Music Direct catalogues). This audiophile beachhead will broaden into a downmarket invasion (trickle-down aesthetics?), and SACD will become established as the high-quality audio format.

The caveat is SACD's lack of video. But we don't always want to *watch* our music, or MTV would have preempted CD by now. I think most people, in most situations, want to *listen* to music; SACD can make most kinds of music, in most systems, *sound better*.

Let's call SACD, at time of writing, an even-money wager. Even or not, I just bought a Sony SCD-1 player. There are already enough great releases out there for hundreds of hours of listening pleasure. And even if the format fails—they all fail eventually!—I'll have enough inventoried entertainment to last a lifetime. Bruce Kopitz
audio_optimizer@cs.com

Both will fail

Editor:

Will DVD-Audio triumph or will Super Audio Compact Disc win out? A burning question indeed, especially for anyone contemplating the purchase of an expensive CD player.

My short answer is that both will fail, because neither addresses the real needs of the consumer. Hi-fi has always been mainly a secondary market in the sense that audiophiles obtain their music from the same sources—radio, CD, etc.—as the rest of the public, but play them on sophisticated equipment in part to overcome the limitations of the media. What a bargain it has been over the years: The mass market has given us excellent music at giveaway prices. Of course, there is also a tertiary market of purists who want to play sophisticated recordings on their sophisticated equipment, but that their numbers are small is reflected in the high price and poor availability of suitable material.

The new DVD-based formats will, for the first time, really split the market into audiophile recording and general recording, to the detriment of both. Take DVD-Audio: As it is not compatible with existing players, it will have to be sold in different packaging to avoid confusion. This will limit its appeal and, rather than encouraging the purchase of suitable players, may instead invoke resentment by people condemned as second-class music lovers by the DVD-A rack in the corner of the shop.

SACD will avoid this polarization, but in doing so throw away the huge capacity advantage of DVD. It must succeed or fail

purely on what will be, for most consumers, a relatively minor quality advantage—a shaky foundation indeed.

In my opinion, hi-fi should turn back to its roots and follow where they lead. But where is that? To find out, talk to any teenager or visit any large music shop. The buzz is *not* about the lack of CD quality. Far from it—the excitement concerns MP3 from the Internet and DVD-Video. Both are suitable media for audiophile consideration, as they offer serious advantages unavailable from other systems: accessibility, enormous capacity, flexibility, and, in the case of DVD, can do for opera and music video what the CD did for audio.

It is in these formats that the future lies, and, as always, in the audiophile making the most of mass-market media. Forget about super-quality CD in whatever format. John Howard
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Dragging their hi-tech feet?

Editor:

As of spring 2000, there was only one audio dealer showing only one SACD player at only one location in the entire Minneapolis-St. Paul metropolitan area. That unit was the \$4999 Sony SCD-1; there was not one SCD-777ES (\$3500) to be seen in town. In addition, I haven't found one local music dealer that carries SACDs, although a few have a small number of DVD music discs. I was unable to purchase SACDs through the Web via Amazon.com or Music Direct. And DVD-Audio players aren't available as yet, and likely won't be until late this year.

What's the story? Please don't reiterate manufacturers' press releases—what's the *real* story? What does it tell you that retailers are not showing these products? There has to be some news here of significance to your readers! The marketing of this new digital music technology resembles the marketing of electric cars—or perhaps the Russian module for the international space station.

The big-league equipment manufacturers appear to be dragging their feet and butts on this technology, while the smaller manufacturers are modestly pushing the change (mostly) with their introduction of 24/96 DVDI-Video discs. Tim Fleetham
St. Paul, MN

The traditional way

Editor:

I would like to see *Stereophile* teach its readers the importance of two-channel audio (the traditional way) for listening to serious recordings. Stay away from multichannel DVD-Audio. I think two-channel SACD is the smartest thing.

You should also publish more reviews of 24/96 recordings.

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Stiffen those Maggies

Editor:

I read the August 2000 review of the Magnepan MG3.6/R with great interest. It was a very well-written, informative article. Brian Damkroger is among my favorite writers at *Stereophile* and has similar tastes in speakers to boot. However, I do have a couple of questions.

It was stated that Magnepan recommends setting the speakers up with the tweeters to their outside edges (or at least so that the tweeters are farther from the listener than the woofers). It was never stated if Brian ended up using them this way, or if he experimented with having the tweeters inboard.

Also — my main reason for writing — doesn't anyone make aftermarket stands for Magnepan speakers? I know how much importance *Stereophile* generally places on speaker stands, yet there was not even any mention of putting cones under the MG3.6/Rs' feet to stabilize these mammoth speakers. I can't see how the Maggies would not improve greatly from the use of some good-quality stands or, at the very minimum, a set of cones.

I have an old set of MGIIAs for which I am fabricating a set of custom stands that will fasten to the standard bolt-hole pattern at the bottom, and will also fasten about 16" from the top. (The speakers can be easily moved 4–5" front to back at their tops; I would imagine the MG3.6/Rs are not much different.) The base will have 95–100 lbs of sand in it.

Grant VanderMye
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Thanks for your kind words, Mr. VanderMye. To answer your questions:

I tried the Maggies in a wide range of configurations, including many with the tweeters to the inside. In my room, I could space the speakers farther apart, toe them in more, and still end up with the tweeters farther from my head. My preferred setup was the one I described, however. I generally got a more even, more expansive image with the tweeters outboard. Having them to the inside gave me a more triangular image, with the rear corners becoming murky and shrunken.

If, on the other hand, you're dealing with a long, narrow room, and have the speakers firing down the long axis, my experience with other Maggies suggests that you have to be concerned about proximity to the side wall. In those setups, having the tweeter outside might cause the image to move forward along the wall, "wrapping around" the listener a bit. I found (in a shoebox room) that I could sometimes get a better balance of image width and depth with the tweeters inboard. I would have included more on setup in the review, but it was already longer than it should have been.

I understand and share your concern about speaker stands. (I'm not positive, but I think that *Sound Anchors* may make stands for the Maggies.) It's certainly disconcerting to have this huge, flimsy panel waving in the breeze, after we've all convinced ourselves that super-rigid coupling is the way to go.

The Maggies' size may work a bit in their favor, because the panels don't have as much displacement as a cone driver. I did play around with Tiptoes with the 3.6/R and several other Maggies, but it never seemed to make that much difference in the sound. The floor/stand coupling isn't the weak link, in my opinion, but rather the stand/panel coupling, the rigidity of the stand itself, and the rigidity of the panel itself. Just putting the stands on cones — even bolting the stands onto cones — doesn't do much.

I didn't want to do anything beyond that, because my practice (and *Stereophile's* policy) is to test products in a completely unmodified state. Back when I had Infinity RS1bs, I did make modified bases for the midrange-tweeter panels that had a triangulated aluminum brace coming about two-thirds of the way up the speaker's back. But the Infinity's structure was far more rigid than the Maggies, so the stand and coupling were easy to fix. I plan to keep the 3.6/Rs; maybe I'll play around with something like your attachment 16" from the top. — Brian Damkroger

Both are correct!

Editor:

I have been a *Stereophile* subscriber for a bit over a year now and have followed the debates in "Letters" with great interest. In particular, I have been stimulated by the "subjectivist-objectivist" debate, which seems never-ending and never resolved. I would like to offer my thoughts on the subject.

As I understand the issue, "subjectivists" claim that they are able to distinguish various differences in sound quality that are currently not understandable via traditional scientific theories, and that scientific methods of testing are not applicable because of the unique characteristics of listening to music.

On the other hand, "objectivists" claim that this is all nonsense, and that "subjectivists" are merely fooling themselves in a variety of ways into believing they can hear differences that don't exist. They point to the fact that "subjectivists" are strangely unwilling to test their abilities via standard single- or double-blind testing.

Of course, both sides are correct! It is a clear mistake to prefer theory over experience in general (scientific theories are imperfect and change over time) — but at the same time, the conceptual gymnastics required to justify not testing this ability are quite amazing.

I would like to suggest that, rather than continuing to perpetuate this as a conflict, both sides consider that the other side may indeed have something of value to offer. In particular, what the "objectivists" offer is the possibility of saving large amounts of money if, in fact, the differences heard have a lot to do with expectations and money spent. For most of us with limited budgets, this would be a wonderful thing — identifying what changes do in fact produce verifiable differences in sound would help us be more effective and cost-effective.

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The idea of using some kind of blind testing, especially for reviews, appeals to me. I would be much more interested to read reviews of components if the reviewer didn't know who made them and how much they cost—I suspect it might be an eye-opener for all of us.

Thank you for your continuing efforts to review reasonably priced equipment—the Cambridge Audio equipment in the September issue, for example. I hope it continues. Thank you for being a source of continuing entertainment and education.

[Name & address withheld by request]

In awe of George

Editor:

I am in awe of George Reisch's response to the idea of blind testing ("Undercurrents," September 2000). Let me see if I can summarize his argument:

Blind testing will never work because there are too many uncontrolled variables: bad power, lousy mood, I'm not holding my mouth right, whatever...

The whole purpose of blind testing is to remove these variables to the extent possible. However, the problem with Mr. Reisch's position is that he has this inexhaustible list of variables that he can add to the pile at will and then say, "See, I told you: too hard, too complex." The whole argument gets a little silly in that, by implication, any measure of human performance, according to Mr. Reisch, is ultimately not measurable. Just too many damn variables.

Let's, for the sake of argument, say that Mr. Reisch is correct. He forgets that repeated measurements over time, or measurements over multiple people, control for this very randomness he dislikes so much. That's how science works.

Mr. Reisch also fails to see certain implications about his position that should be of concern to him. For example, I hope Mr. Reisch, following his own argument, would agree that the anticipation of sex is as much of a mind thing as sex is itself. As Mr. Reisch clearly values his music, can we infer that the anticipation of a new cable is almost climactic? (Sorry, couldn't resist.) And, just maybe, that this anticipation changes his expectations, and therefore perceptions, just a tad more than random variations of the electrical grid system?

Let's go another step. If Mr. Reisch is correct, according to his own logic, he must have real trouble evaluating the contribution of any new component to his system. Is it the component, the electrical grid, his mood, the distracting smell of his lover's perfume? Should we therefore assume that Mr. Reisch can't evaluate anything and should be fired from his job as evaluator?

Mr. Reisch argues that mistakes might be made. Well, duh, yeah. If mistakes are made

in a controlled environment, how many mistakes are made in a totally uncontrolled environment? And which process, over time, is self-correcting?

There is nothing wrong with applying metrics to the human experience. As a matter of fact, this application of metrics has done lots of good (and, yes, bad) things for us. If Mr. Reisch thinks that listening to music is too complex to measure, how about measuring the effects of new drugs? These effects are measured all the time using rigorous, scientific methodology. And double-blind tests.

Stew Devan

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In awe of Ross

Editor:

I loved Ross Salinger's letter to the editor in the September *Stereophile* (pp.10-12). I not only agree 100% with Mr. Salinger, but his letter was almost therapeutic. I read too much that leaves me so skeptical, the hairs on the back of my neck stand up. In a clear and thoughtful way, Mr. Salinger stated things that I've felt for a long time.

Will people believe *anything* that sounds reasonable? This dread of objective listening tests damages my trust in what I read, but because I love music and delight in great sound, there's nothing I want more than finding a way to improve my music. I crave a box attached to a laptop that randomly switches between two components and asks, "Do you prefer A or B?" a dozen times or so, after which it would tell me if I really do prefer one over the other, or if it's all a trick of anticipation.

I gave a wine-tasting party a few years ago, for which I brought home a dozen empty bottles that had held nice wine from a local restaurant. I cleaned the bottles and filled them with Yosemite Road Burgundy. The unsuspecting tasters were between 30 and 40 years old and of varying levels of sophistication. What happened surprised me. I'd bring out another bottle, and after everyone had a taste, someone would say something like, "Oh, this one is *much* more tart than the last." Someone else would take another taste and say, "You're right, it is!" Another person would mention how much better they liked this wine than the last.

I never said a word about the wine, outside of reading the labels aloud. I asked myself if people were going along with others' comments so as not to look ignorant, but the closer I watched, the more I was convinced that they were sincere. The exact same wine was experienced by the group as sweeter, more tart, bitter, dryer, etc. About half the people loved at least one of the "wines," and about a quarter of them disliked one.

I can't keep from remembering this experiment party when I read some of the ads and

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articles in audiophile magazines like *Stereophile*, on the Web, and in the occasional book on high-end stereo. It seems undeniable to me that there is at least some of this placebo effect happening. The fanatical resistance to anything that might compensate for it leaves me frustrated and, as I said before, incapable of trusting what I'm being told.

I could go on about wanting reproducibility, wanting improvement in the face of doubt, and wanting truth independent of the reporter's state of mind. If I have to know what I'm hearing beforehand, or to believe in order to get the benefit, then I'll keep my money and my disbelief. I crave a reporter with a healthy amount of doubt and skepticism coupled with an honest love of music, and that's exactly how Ross Salinger's letter sounded to me.

Tony Earl
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Tubes do sound louder

Editor:

I can directly confirm Peter van Willenswaard's observation that tubes sound louder than solid-state amplifiers (September 2000, pp.55-59). The excellent graphs Peter provided allow me to make an educated guess as to what is going on below the surface.

Back in 1981, when MOSFET amplifiers were all the rage, I borrowed a 75W Nikko from my employer. Its competition was a Leak Point One with EL84 output tubes, weighing in at about 15W. I hooked up the Nikko, put on a record, and went about my business.

Suddenly, the Nikko went AWK! and shut down. I turned it off and checked for damage. Negative, so I gingerly turned it back on, and started the record again. Same thing. Finally, I sat down to watch the amplifier. At exactly the same place that the amp had failed, both power meters lit up like flares and the amp went into protection. That amp, at five times the specified power of my little Point One, couldn't approach the level of loudness that the Leak produced!

Since then I have found that many MOSFET amplifiers often appear much less dynamic than tube or bipolar designs. I attribute this to problems with the driver stage, which, in MOSFETs, is difficult to design.

Turning to PvW's curves, it is obvious from figs.2 and 4 that the tube amp will sound much louder than the transistor unit. Our ears integrate sound levels; they are far more sensitive to power than to amplitude. Thus, the amp with more area between the zero line and the curve will sound louder.

Now here's the zinger: The positive swing of the 300B amplifier is obviously grossly distorted. There are compensating mechanisms at work here, but still, why doesn't Mr. van Willenswaard notice the distortion? I simply have no explanation.

The distortion itself comes from overdriv-

ing the control grid. This grid is normally maintained negative by a special power supply in the amplifier. However, if the input signal goes sufficiently positive, it is possible to counteract, and even reverse, this voltage. As long as the voltage stays negative, the grid can control the action of the tube while consuming no power of its own. The horizontal lines in the graph begin at the exact moment the voltage turns positive. The driver stage, which is not normally designed to deliver power, can no longer drive the grid more positive. Notice the efficiency of the process: As the driver stage tries to increase the voltage, the net reaction of the grid is to go still more negative, and the line actually tilts down.

The solution to this problem is to design a driver stage capable of supplying considerable power to the input circuit of the output tube. This is known as Class A² operation.

The reason Mr. van Willenswaard found different peak outputs depending on whether the amp was connected to a resistance load, to speaker A, or to speaker B lies in the amount of energy stored in the system. A resistor is incapable of storing energy, so Mr. van Willenswaard found few differences in the amplifiers he checked with a resistor. Add a speaker, and the picture changes radically. Speakers possess considerable inductance; thus they can store a fair amount of energy. You would not expect speakers of different design to store identical amounts of energy, and that is what Mr. van Willenswaard found: The more inductive the speaker, the more energy was stored.

The second factor to be considered is how closely the amplifier can control the speaker. The property that determines this is the damping factor. The source impedance is merely the inverse of this number. As soon as Mr. van Willenswaard equalized the source impedance (by adding resistance) of all the amplifiers, there was little difference in the graphs they produced.

I hope this clears up some of the mystery surrounding vacuum-tube electronics. It was once a dynamic, vital technology, but now is mostly relegated to owners of high-end equipment, guitar amplifiers, and microwave ovens. Good listening!

Bob McIntyre
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Thank you Mr. McIntyre, and I agree with most of your observations. But could we conclude then, that amplifiers that have near to zero output impedance, waste energy that the loudspeaker has in store and is ready to use for building up extra sound pressure, by shorting this energy out?

— Peter van Willenswaard

A Fond Farewell to JGH

Editor:

This letter is to all of you; the tweaks, the

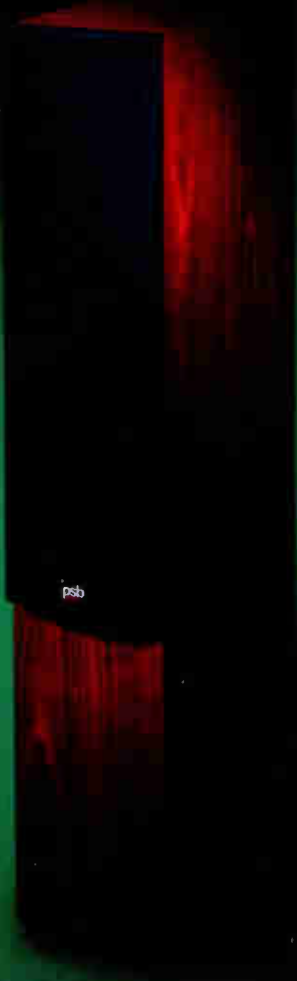
ABXers, the women who don't understand why +98% of the *Stereophile* crew and readers are men, the engineers, the folks who can't understand why (they think) you review only kilobuck equipment, and those who don't see it that way. It's for those who think they "get it" and those who actually do. (Decide for yourself.) And, of course, I haven't forgotten about those who beg for the reviews of \$3000 systems as opposed to cables that cost that amount. It is to anyone who ever cared about audio, music, and its reproduction. It is also an opportunity for me to correct what I consider an embarrassment on my part.

You see, I have been into audio since J. Gordon Holt "saved" me back in the early 1960s, when I was grooving to my Sears stereo and the Beach Boys rocked my world. I have been attached to the hip of our audio world for almost 40 years and have never written to an audio publication. Never. And it is not for lack of opinions. Boy, can I give you an opinion on any topic in the *Stereophile* "Letters" forum on any given month.

So why now? I guess it's a combination of Gordon's leaving, the "almost" new millennium (1/1/01, folks), Bill Huey's letter in last January's *Stereophile*, and a few other things I probably am not recalling at a conscious level. I have almost 40 years of opinions to get off my chest and I wanted to help send Gordon out with the fanfare I feel he deserves. This is dedicated to you, Gordon. I owe you.

First, whenever I read any of the opinions of the illustrious *Stereophile* reviewers or any *Stereophile* readers or those from other magazines, I ask myself why I should care what they think. Not that all opinions, regardless of what they are, are not valid; I just want to know from what position they are presenting their views. What is their background, what is their experience and relation to music and audio? Here are mine.

I got my first stereo, a Sears all-in-one, in 1963. I had saved all year to buy it. I spent the '60s building tons of Dynakits, Heathkits, tons of speakers, and, of course, read those Allied and Lafayette catalogs. I went to college to study electrical engineering and went on to get my Master's in EE. I met a lot of engineers in school and we spent a lot of time discussing, building, and listening to equipment. This is where I started to firm up my thoughts on all of this audio reproduction stuff. Music was becoming more than just something to get my brain jumping. My dorm room was a center of attraction due to the fact that I had the most happening stereo rig, hands down. I used Duals, an AR 'table, Scott stuff, Teacs, Sonys, and anything else I could build, or buy used and fix up. My speakers were custom-made four-way monsters almost as big as Altec VOTTs (look it up) or the big Bozaks. Man, did those babies rock! My cousin still uses them.



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My life's work has been in my other love, computers. I am a ham radio operator. I have read a ton of audio and music magazines over the years: name one, I've read it. There is hardly a tweak I haven't tried. For years I was editor of the online audio forum at a former employer, and wrote something I called "The Audio Survival Guide" to cover the basics for the new guys.

Over the years I have spent thousands of hours doing what most *Stereophile* readers do. There are the times you hang in stores to see the new stuff, the get-togethers with other friends to mix and match gear to build super systems and trade opinions on equipment and music, and the countless hours with the tweaks. Like most high-enders, I have gone through a ton of equipment and built up to what I think you would say is a pretty decent system. I am lucky that I have found a point in my life where I can enjoy great music and have a system that pretty much gets me there. So there you have it. I have paid my dues.

I sit here and read these letters and reviews year after year, and to me it is all crystal-clear: None of you is wrong per se. Just like anything else in life — religion, politics, or something else — a lot of this is perspective and value judgments. If you are brought up to believe in God or that Fords are the end-all in cars or that guns are good or bad, those are positions you are taking and not absolutes. A lot of people think there are absolutes in life, but I haven't found a lot of them.

Take the issue of tweaks — a big one through the '80s, and we don't hear as much about it now as we did then. I can assure you (at least as much as my opinion counts) that virtually all tweaks make a difference. Trust me. The question is whether you can hear it, whether you feel it is worth the cost even if you can, whether your system allows you to "see" the tweak, and the value you place on what it does to change the music. But just about anything you do to your system will change what someone can hear. Some tweaks I feel are pretty much masked by the music. There are many I didn't hear until I heard them used on a much better system than my own.

Some tweaks just stand out. Some you have to listen to for months on a top system to hear, and even then, many people will not hear a thing. That's not a bad thing. Some of you can hear things I can't, and vice-versa. You know how we're always talking about soundstaging, imaging, focus, and how close the music is to the real thing? Well, I sure didn't know much about that when I was 20. I know now. You can become real smart about this stuff and take it to heart. Or, like most folks, you can just enjoy what you hear and not try to dissect it a lot. I'm that way with paintings and wines. I'm sure there is a whole world out there to know about those

areas of life, but I couldn't care less.

Music and audio are things I have taken a great interest in and learned a lot about. If you haven't done that, are you really in a position to judge those who have? You personally must decide what "value" you place on any of these, tweaks or otherwise. Not whether they change the music, because most of them certainly do. If you can't hear it, you may not have a refined enough system or not learned what to listen for, or you just may not care, and that's okay. Just don't tell me cables don't matter. They do.

For example, let's take (quickly, most of you might say) the Tice clock. This was a special kind of modified digital clock that supposedly improved the sound if you plugged it into the electrical system of the audio gear. I happened to go to a high-end dealer in New Haven on a rainy Saturday when the Clock first came out. The sales guys had been arguing back and forth and with the owner as to whether it could be heard and whether it mattered. I was the only customer. They pounced on me: "A customer! Let's get him to listen!"

I can tell you that if 98% of you tried this out, you would say in a heartbeat that it made zero difference. But in their good system with the then-brand-new Thiel CS5s, Krell amps, Audio Research preamp, and a top turntable, there it was. After an hour of listening to get ready, I picked it out in a blind test 5 out of 5 times, knowing when it was in there and when it was not. But I couldn't have cared less whether it was in the system or not. The difference was so small to me that I had to listen very hard, and even then, could hear it only with certain music. Would you care? Almost certainly not. Did I? No. But it did change things! I heard a small difference.

However, take cables. I have to shake my head every time I have someone over to the house who is not into this stuff, or if I have read one of your letters about how "wire is just wire." No, wires are filters, and they have a big impact on what you hear. There is virtually no doubt about this (remember, it is my opinion), and it can be easily demonstrated even to those not trained to listen.

This is a good time to bring up the analogy of microscopes and value systems.

Part One: Consider the tool being used. Think of your audio system (same applies to video systems) as a microscope on the music. It can be a cheap plastic magnifying toy from a Cracker Jack box or an electron microscope. With one, you see letters on a page a little bigger. With the other, you get atomic-particle precision. Same with stereos. My folks' cheap all-in-one set does Frank Sinatra fine for them, but you aren't going to hear cable differences on it. On my system, you hear those differences.

Part Two: Value systems. Remember the



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Stereophile's 1995 "Budget Component of the Year"
Stereophile's 1996 "Loudspeaker of the Year"
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Stereophile - Class A "Recommended Component" (SC-IV/A)
Stereophile - Class C "Recommended Component" (SC-I/AV)
Stereophile - "Recommended Component" (Z6 Loudspeaker Cable)
Stereophile Guide to Home Theater - ★★★ "Recommended Component" (SC-I/AV)

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-Harry Pearson, *Fi Magazine*, February 1998

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-Alan Sircom, *Hi-Fi Choice*, October 1997

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- Martin Colloms, *Hi-Fi News*, June 1997

“... the ART belongs in that very small class of products without peer. . .”

-Wes Phillips, *Stereophile*, May 1998

“... the ART preamp made it all so intimate. Every nuance is there, to touch and be touched.”

-Tom Miiller, *The Audio Adventure*, June 1996

“... one of a kind. The ART establishes new standards for reproduction of instrumental tonality, dynamics, liveliness, and even soundstaging . . .”

-Myles Astor, *Ultimate Audio*, December 1997

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wine analogy above? I have no taste when it comes to wine. I buy what tastes good and is cheap. But I know there are a lot of people who not only know a good wine, but can tell me why it is good and worth \$200 a bottle. I ask those friends about the wine, they ask me about consumer electronics. We're both happy. But they aren't going to spend 50 grand on a stereo, and I will never buy a bottle of wine over \$20. When it comes to spending money in large amounts on something, what seems crazy to you may be perfect for me, and vice-versa. We're all different. Just accept this.

And stop picking on *Stereophile* or any of the other high-end magazines. Just like any other hobby or interest, there are specialty journals that explore the leading edge. That is why a lot of us read it. *Stereophile* isn't stupid. They know that most people are going to spend \$5000 tops on a stereo, and they review gear that fits in that price range. But you might want to learn and grow in the hobby; by understanding the reasons for the front-line gear, you learn.

If you know what the "best" is (subjective, but take a poll of those of us who have paid our dues), it helps you to shop for the "only pretty good." It helps you understand what compromises to make and what ones you can live with in that less-than-perfect system. And they review and we read about those Krell, Levinson, and Jadis amps for the same reason car guys read and drool over fancy foreign cars: It's fun. The best magazines are those that cover the leading edge, the news of the industry, and the practical matter of just how we should spend that \$5000. *Stereophile* does it better than most. If I read only one magazine on audio, this would be it.

A big sore spot over the years has been the war between the "measuring engineers" vs the "subjective I-can-hear-a-difference" crowd. You know who you are. Newbies, pay attention: I was educated as an engineer. I am conservative in my views, I like proof of anything, and don't believe in most of what I can't see. That doesn't mean I am right about any particular issue. It's my opinion. But I can honestly tell you that, after 40 years of this, what you hear in an audio system does not necessarily map to what you can measure. It may and it may not. I have heard fabulous systems that don't measure as well as you would expect, and I have heard ruler-flat amps that just sucked big time. There are things in there that we haven't discovered yet, or don't understand yet, that make a difference. Also, the interactions of equipment throughout a system certainly matter. You do have to match equipment for the right "fit." Don't believe your friend who says you can plug anything into anything else. They may physically fit, but is it the best sound you can get for the money?

Of all the issues we can discuss, the "blind testing" issue is the toughest for me. I have had both very good luck and failed terribly at this. I am quite sure that one's familiarity with the equipment in a known environment matters a lot. And on any given day, I may feel that I can make the call or not, depending on a hundred factors. I'm quite certain, though, of this: If you are inclined to learn about high-end audio reproduction and you love music and it matters to you to understand what gear gets you closest to the real thing, then prolonged subjective listening over time is the only way to find the best path. This is exactly what the reviewers in the better magazines do. When they or I or many of you are placed in an unfamiliar system in a different environment than our own, and then asked on a moment's notice to pick this speaker or that as the best, they may fail. But that does not invalidate the subjective testing over time at all. Someone may be an expert in this field, but he's human and may not be able to perform on demand in all situations.

To all the ladies out there: This magazine, like most consumer-electronics publications out there, is targeted to a male audience because 95% of the people who get all worked up over this stuff are males. It's not personal, just statistics. If you ran *Stereophile*, you would do the same thing to appeal to the widest audience and make the most money. And don't get too upset with ads that you might think are "sexist." The average guy likes looking at a pretty woman in a nice dress, and the marketing people know that. It's not a sin; it's normal and healthy.

I suspect that many of you are asked all the time why you spend all this money on a "stereo"! I say it's like any other hobby: It pushes my buttons. I love all the techy gear and all the science behind it, but the bottom line for me is how the music makes me feel. I almost always enjoy the music. But every now and then, the gear and the music come together at the right moment and it hits me like a ton of bricks. When it happens, you know it, and you understand why you do this. It's magic... Other people find their personal satisfaction in boats, cars, cruises, or Aspen. Not that I can't enjoy many other facets of life, but this is my thing.

I know *Stereophile* gets a lot of letters telling it how to change before they lose half their readership. I know I will still read it. But having a big interest in computers and a growing interest in home theater, I can see how the golden years of audio are over. I am the consummate consumer-electronics junkie. And guess what? The money only goes so far. All kinds of new technologies are coming out, and this will pull interest to other areas. I look at myself—someone who has been very tight with this hobby for a

long time—and see my eyes wandering. Not that I'm going to give up listening to music anytime soon, but I suspect John A. and the gang have to be thinking about how to retain and grow the readership.

I think technology convergence is coming on strong, and I think *Stereophile* needs to find a way to change over time. They have done a great job at what they do, but I don't know any twentysomethings who are pushing to learn about high-end audio like I did. Not one. It's all computers and video and MP3. That's a little scary. Same thing for my Ham radio hobby. I often think that *Stereophile* and *Stereophile Guide to Home Theater* will merge over time. It would make a lot of sense, don't you think, John? [Actually, no. *The two magazines' different missions are based on music and film—"hot" and "cold" media, respectively, in Marshall McLuhan's parlance.—Ed.*]

I want to throw out a few last bullets on the subject. I'm sure many of you are the chief consultant whenever those in your circle need buying advice. I give a lot of it. The first and last law of audio is quite simple: Ultimately, you have to sit and listen to what you buy. Regardless of anything they say in *Stereophile* and anything your well-meaning friends and relatives tell you, if it sounds good to you and you can afford it, then buy it. My best friend owns a set of expensive speakers that are a joke in high-end audio. I wouldn't be caught dead owning a pair for free. He loves them. That works for me.

My final words are to Gordon. Of all the countless people whom I have read, met, and enjoyed this hobby with, the one who got me going was J. Gordon Holt. I might have ended up on the same path anyway, but he slapped me upside the head early on and I am grateful for that. I have enjoyed the thousands of records and listening sessions and the journey to where I am. Gordon was the guy who really invented high-end audio reviewing, and we all have benefited from that. I learned a lot from you, and always felt that you gave it the best you had. Thanks.

Jim Lawrence
jrlawrence@erols.com

A question of balance

Editor:

I understand that "fully balanced circuitry" means that there are "two" of everything in the circuit path. How and why should/does this create a sonic improvement?

Tim O'Connor
Beloit, WI
OConnor.Tj@ecolab.compuserve.com

Because the two identical halves of the circuit handle opposite-polarity signals, any spurious that are common to both halves (noise, distortion) cancel each other out. But it is no simple task to make sure that this indeed happens.

—JA

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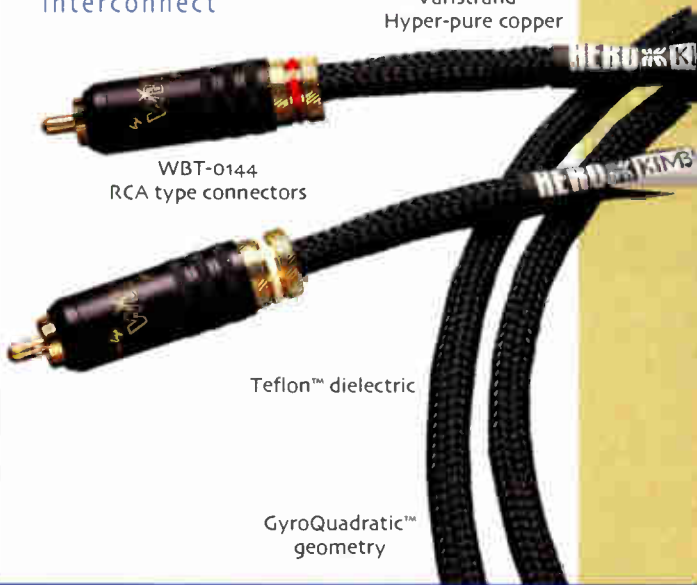
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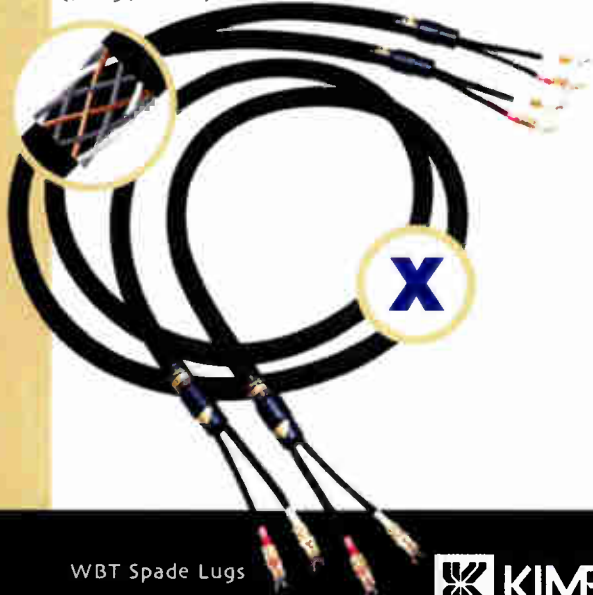
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Sixteen discrete
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(9awg / 6mm²)



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XL



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KIMBER KABLE

Revealing the Nature of Music
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Industry Update

US: NEW YORK

Jon Iverson

Home Entertainment 2001: The Hi-Fi & Home Theater Event (formerly The HI-FI Show) is heading back to the heart of New York for the first time in five years. Described as "a unique hands-on event where attendees will see and hear the newest and the best in home audio and home theater," HE 2001 will take place May 11-13 at the Hilton New York, 1335 Avenue of the Americas, New York, NY 10019-60789. Show times will be Friday, May 11, 10am-7pm; Saturday, May 12, 10am-7pm; Sunday, May 13, 10am-6pm.

Exhibitor and contact information is online now at www.homeentertainment-expo.com, while a complete list of live music events, audio/video seminars, panel discussions, and other special programs will be added to the HE 2001 website later this year. Show attendees wanting to plan ahead can call (800) HILTON for a Home Entertainment 2001 room rate of \$210 per night plus tax. Tickets to the show are expected to be available early in 2001, and can be purchased by mail or from the HE 2001 website.

US: WASHINGTON DC

Barry Willis

Audio manufacturers who know what's good for them avoid stepping on the toes of Bose, Inc. The Framingham, Massachusetts-based corporation is re-

nowned for its ruthless marketing and zealous protection of its patents.

Harman International Industries is learning this lesson the hard way. On September 1, the Northridge, California electronics conglomerate was slapped with a \$5.7 million judgment in a patent-infringement suit. Bose launched the litigation against two of Harman's loudspeaker subsidiaries, JBL, Inc. and Infinity Systems Corporation, over the use of an elliptical plastic port in some speaker models. The decision includes an injunction against producing or selling any products with the disputed feature.

Harman has agreed to change the design of the port, but has also decided to appeal the judgment levied against it by Judge Patti B. Saris in a US district court in Washington, DC. "We expect our appeal to be successful," said Harman CEO Bernard Girod on September 6. "If, however, the judgment is not reversed on appeal, it will not have material consequences for the company. We have provided for such contingencies in our business plan." Harman International also owns Revel, an audiophile loudspeaker brand not involved in the lawsuit.

US: MASSACHUSETTS

Jon Iverson

Loudspeaker manufacturer Boston Acoustics has named Moses A. Gabbay as the company's new president and chief operating officer, according to a press re-

lease dated August 24. Bob Spaner will become executive vice president.

A company veteran with more than 20 years of service, Gabbay was previously VP of engineering. He directed the growth of BA's multimedia audio business, which in the past three years has grown to equal the size of the corporation's home- and car-audio divisions. In his new position, Gabbay will also oversee the financial and manufacturing ends of the business. "Moses assembled the engineering team to develop leading-edge products that have put Boston Acoustics in the forefront of the computer-audio business," said chairman and CEO Andy Kotsatos. "As a result, the company now has skill sets we didn't have three years ago, and we can offer products to reach new markets in and beyond our traditional audio speaker business."

A 12-year company veteran, Bob Spaner has worked as field sales manager, national sales manager, and VP of sales and marketing. As executive VP he will administer BA's marketing and sales efforts. "During Bob's tenure here, sales have more than quintupled, to \$108 million last year," said Kotsatos. Of the Gabbay-Spaner team, Kotsatos said, "Moses and Bob have not only grown with the company, they have led that growth. We want to take advantage of their experience and team-building expertise as we head into the next phase of our company."

Calendar

Those promoting audio-related seminars, shows, and meetings should fax (do not call) the when, where, and who to (212) 886-2809 at least eight weeks before the month of the event. The deadline for the January 2001 issue is November 1. Mark the fax "Attention Jonathan Scull, Dealer Bulletin Board." We will fax back a confirmation. If you do not receive confirmation within 24 hours, please fax us again.

ARIZONA

● The **Arizona Audiophile Society** sponsors monthly audio and home-theater meetings and events. For information, call (623) 516-4960, or e-mail AzAudioS@aol.com.

CALIFORNIA

● The **Bay Area Audiophile Society (BAAS)** welcomes new members, sponsors periodic manufacturer demonstrations, facility tours, and listening sessions, and publishes an informative

newsletter, *High Note*. For information, call (415) 381-4228, or e-mail Dennis David at bluedeer@value.net.

CONNECTICUT

● For information about the **Connecticut Audio Society**, visit www.the-atom.com/cas, or call Carl Richard at (860) 745-5937.

GEORGIA

● Sunday, November 19, 2-5:30pm: The **Atlanta Audio Society** and

UNITED KINGDOM

Barry Willis

The Secure Digital Music Initiative (SDMI) will soon move into Phase II of its evaluation of digital audio watermarking, following listening tests conducted in early July at Sony's Whitfield Street Studios in London and administered by Sony VP of engineering Malcolm Davidson. A report from Paul Jessop of the International Federation of Phonograph Industries reveals that the participants in the tests—almost all of them audio-industry professionals or journalists—averaged just slightly better than 50% in their abilities to detect the watermarks.

The Whitfield Street trials were roundly criticized by some who took part: for the selection of test material, which was said to be marred by analog tape hiss; some extraneous noise in the listening area from a laptop computer and from adjacent rooms; and for the use of ABX testing, long a controversial topic in the industry. "Notoriously tough for the inexperienced, and very tiring," is how classical engineer Tony Faulkner of London's Green Room Productions described the test methodology.

Faulkner continues to be one of the most outspoken critics of watermarking. He had predicted that the Verance watermarking techniques selected by SDMI would become more audible, not less, with more revealing recordings than were used in previous trials. He vindicated himself in the London tests, scoring 75% correct on certain portions.

At the Whitfield Street trial, 27 individuals tried to identify watermarked recordings from four different record labels, in a total of 880 attempts. All the material was recorded at 24-bit/96kHz resolution, though much of it was from analog originals.

The results, as reported by Davidson and Jessop:

Label	Music Selection	Total Trials	Correct	Percentage
UMG (Universal)	Debussy (Solo Piano)	113	224	50.45%
BMG (Bertelsmann)	Prokofiev (Orchestral)	114	224	50.89%
WMG (Warner)	"Little Sunflower" (Pan Flute)	110	216	50.93%
SME (Sony)	Trey Lorenz (Pop)	108	216	50.00%

The average audibility rate for the 880 attempts is 50.57%, according to Jessop. Faulkner is challenging the test interpretations put forth by the SDMI and IFPI that a 50% average score in the Whitfield Street trial indicates that the watermarks are inaudible. The figure—

Cynical Netophobes might dismiss e-commerce as little more than mail-order in a new hat.

virtually the same as random chance—could just as easily be attributed to "lousy test methods, lousy source material, lousy non-standard listening room, lousy monitoring, [or the] ABX method," Faulkner stated in an e-mail after receiving the collated results. He organized a workshop on the topic at the Audio Engineering Society convention in Los Angeles in late September—report to come next month.

Davidson, meanwhile, has announced that SDMI will move into its next testing phase, which will include music recorded and sampled at 24-bit/192kHz. Verance has already signed licensing agreements with several music companies. Potentially

worth millions, the deals are risky only if the music-buying public rejects watermarked recordings, as they were urged to do by *Stereophile* editor John Atkinson in September's "As We See it."

THE INTERNET

Paul Messenger

The Grand Canyon is an inspirational sort of place, and apparently it is here that two ex-TGI executives, taking much-needed exercise after a week in Las Vegas attending the Consumer Electronics Show, hatched an interesting plot for a new approach to e-commerce—one expressly oriented toward the peculiar installation requirements of "real" hi-fi, and intended to keep the specialist retailer closely involved.

Alex Munro (formerly managing director of Tannoy) and Tony Hamza (formerly of Mordaunt-Short) have founded a company called Buyline Ltd. They're building a website (www.thegoodbuyline.com) that will provide an e-tail outlet for selling premium specialist hi-fi brands over the Internet, and routing such sales via each brand's exclusive retail network.

Cynical Netophobes like yours truly might dismiss e-commerce as little more than mail-order in a new hat. But it's obviously a major growth area that is already having a substantial impact on the entire consumer-electronics industry, and that, in turn, will affect the hi-fi sector.

Buyline Ltd. plans to sign up a handful of key specialist brands and offer these for sale through what it describes as "an advanced commercial website" backed up by a call center operating 12 hours a day. Potential customers will access the site directly or via links on manufacturer/distributor or dealer websites. The www.thegoodbuyline.com site will provide visitors with a secure

Calendar

Sounds Right Audio (Roswell) are hosting a "Tour de France" seminar of primarily French high-end audio equipment, featuring products by **Audiomat Amps/DAC, Vecteur, Actinote, Equation, and J.M. Reynaud** loudspeakers. Dr. Gary Lemco, panelist from radio's "First Hearing" program, will present examples of favorite classical solo and orchestral recordings. Guests welcome. For directions and information, contact Mike Maszta at (770) 641-

7876, www.soundsrightaudio.com, or www.mindspring.com/~chucksaudio/index.htm.

LOUISIANA

● New Orleans' first and only high-end audio club holds monthly meetings to discuss topics of interest and listen to music. Join the fun by e-mailing stokjoc@hotmail.com.

MASSACHUSETTS

● For details of upcoming meetings of

the **Boston Audio Society** and samples from their publication, *The Speaker*, call (603) 899-5121, visit <http://bostonaudio.home.att.net>, or e-mail dbsystems@attglobal.net.

● Thursday, December 7, 7-9pm: **Goodwin's High End** (899 Main St., Waltham) hosts designer Steve McCormack, of **McCormack Audio Corporation of Virginia**, who will introduce the new RLD-1 preamplifier and DNA-125 and DNA-225 amplifiers. Call (781) 893-9000 for reservations.

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Notice the resemblance? The new CDM-NT series of loudspeakers shares the same innovation and excellence that inspired our original Nautilus design. At \$40,000 per pair for the original, we realized that not everyone could own the perfect loudspeaker. Then we embarked on a five year mission to bring this high technology down to earth. The result is a series of loudspeakers that set incomparable standards for performance, style, and value. In case you're wondering, we're B&W. We are the world's leading exporter of premium loudspeakers and the number one imported brand in North America. Available only at select audio / video dealers.

B&W

LISTEN AND YOU'LL SEE

electronic purchasing facility, and will give details of the nearest retailer for a given component or system.

Buyline likens itself to a “dating agency” for putting the e-customer in touch with the nearest bricks-and-mortar retailer, echoing the strategy of US-based KnowledgeLink (see next story). The company will collect a 10% fee for registering the sale, and pass 3% back to the website that provided the introduction. At first the operation will apply only to the UK, after which its founders hope to spread it throughout Europe.

Net-surfers tend to look for the most competitive prices, an objective often at odds with the demonstration and home-installation skills espoused by some hi-fi brands and dealers. Buyline will attempt to square this circle by offering hi-fi for sale at different tariffs, according to the level of service provided. Customers can get the cheapest price by visiting the shop to pick up the goods, pay a little more for home delivery, or still more for the full home-installation Monty.

Trawling around a number of industry contacts, I found most people cautiously welcoming this initiative. Although some are waiting to see how it all turns out, at least two major brands have already signed on. The plan was to have www.thegoodbuyline.com up and running in time for the UK's mid-September hi-fi and consumer-electronics shows.

Although making predictions about the e-future is for the stock markets, not yours truly, the Buyline strategy looks like a specialist-industry-friendly way of dealing with the issue of online sales. As such, it deserves to succeed. But I can't help worrying whether it has the muscle to co-exist alongside the emergent “big boys” of global e-tailing.

THE INTERNET

Jon Iverson

E-tailer KnowledgeLink announced at the beginning of September that it has secured \$10 million in financing from Hewlett-Packard to further the development of KL's software technology platform, called DNA. According to KnowledgeLink, the DNA software “links manufacturers and their distribution partners with consumers through vertical portals, providing a ‘clicks and bricks’ collaborative business model

The Buyline strategy looks like a specialist-industry-friendly way of dealing with the issue of online sales.

which resolves distribution channel conflicts.” KnowledgeLink also announced that H-P is providing software-development services to further industrialize and create products from KL's DNA software.

Hewlett-Packard's Stephen Helper explains that “we were impressed with KnowledgeLink's execution in this new ‘bricks and clicks’ collaborative space with GetPlugged.com. Distribution-channel conflicts are a big problem in today's Internet world, and they have a solution. We like their technology and the value proposition they bring to their partners and customers.” KnowledgeLink's Lew Eisaguirre adds that “this relationship provides us with resources to take our technology to the next level — an industrial-strength, pro-

ductived software platform that will fulfill the distribution needs in many vertical markets.”

E-wisdom holds that one of the big advantages about retailing on the Internet is that, once a company is online, the entire world of consumers is only a few mouse clicks away. This concept holds up much better in theory than in practice. Language barriers, shipping costs, and import/export red tape (such as agreements controlling which countries a retailer can even sell a product line to) have all made the reality less than ideal for e-merchants.

To solve the global sales problem, Hifi.com has decided to create websites specific to each country it sells to, and announced the launch of Hifi.com Asia in September, to serve the Singapore market. Hifi.com claims that the new site is the first comprehensive online consumer-electronics retailer to serve Singapore. The company plans to launch websites in other global markets, including additional Asia-Pacific regions.

Product lines featured on Hifi.com Asia will include Cambridge SoundWorks, Harman/Kardon, Marantz, JBL, JVC, Infinity, Samsung, and Sony. Hifi.com says that Hifi.com Asia will also offer customer-service features, including before- and after-sale support via its Call Center, product information and installation guides, and competitive pricing.

Spotting another online niche, Hifi.com debuted CustomHifi.com in early September. The new site is aimed at custom installers. HiFi.com claims that CustomHifi.com is the first “comprehensive national, Internet-centric marketplace to offer custom electronic design and installation professionals access to leading audio/video products, information, and installation support.”

The new venture, which HiFi.com

Calendar

MICHIGAN

- **Ensemble** (3160 Haggerty Rd., Ste. B, West Bloomfield) is pleased to announce that it has been appointed as a **Mark Levinson Reference** dealer. In addition, Ensemble has been appointed the exclusive dealer for **Marsh Sound Design** and **Perpetual Technologies** digital products. For information or to arrange an audition, call (248) 668-1400, or visit www.ensemblehome.com.
- **Sound of the Soul** (Utica) is pleased to

announce that it is now an authorized dealer for the **James Loudspeaker Co.** For further information or to set up a private audition of the complete line, call (810) 759-0281 or (888) 83-SOUND, or visit www.soundofthesoul.com.

NEW JERSEY

- The **New Jersey Audio Society** welcomes anyone interested in high-performance LP and CD playback systems to become members and participate in their monthly meetings. Annual dues

are \$20, and include a subscription to the society's newsletter, *The Source*. For more information, please e-mail your mailing address and telephone number to annalogg@aol.com or to markj mills@earthlink.net.

NEW YORK

- Friday, November 17, 7:30pm: The **Audiophile Society** hosts **Stereophile** senior contributing editor Michael Fremer. Turntable, phono section, and vinyl in hand, MF will deliver a presen-

SONY

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says builds on its business-to-business initiatives, is planning to offer in-wall speakers, multi-source/multi-zone systems and amplifiers, speaker selectors, in-wall controls, and accessories. Once they are registered and approved, CustomHiFi.com is planning to offer custom installers reseller prices of up to 50% off retail. Hifi.com's Michael Sullivan explains that, "to date, the custom install professional, who has a need to purchase high-quality audio/video products at discounted prices, has not had a one-stop alternative. CustomHiFi.com was built on this premise and offers the first true e-commerce-enabled business-to-business custom electronic product procurement alternative."

US: INDIANAPOLIS **Barry Willis**

The enduring audiophile dilemma about whether to optimize a home-entertainment system for music or movies may no longer be relevant, thanks to new disc players from Sony Corporation and Philips Electronics NV. The machines were introduced at CEDIA Expo 2000, the annual home-theater and custom-installation trade show held in Indianapolis in mid-September.

One of Sony's new line of versatile, affordable machines, the DVP-S9000ES, is the company's first combination Super Audio CD/DVD player. The DVP-S9000ES will also play standard CDs, CD-Rs, and DVD-Rs. A dual-laser optical system ensures compatibility with all existing formats. No mention is made in Sony's official announcement of DVD-Audio, whose rollout is still bogged down in copyright-protection issues. SACD is the high-resolution digital audio format developed by Sony and longtime partner Philips as the successor to the standard CD.

Due at dealers in November, the DVP-S9000ES carries a suggested retail price of only \$1500. The machine should whet the appetites of audiophiles eager to try SACD but reluctant to pay for Sony's much more expensive early-generation SACD players.

Superb audio performance is only one attraction of the new player, however. Movie fans will be happy to know that the DVP-S9000ES also outputs both interlaced and 480-line progressive-scan video signals, and has proprietary image-processing circuitry to minimize motion artifacts and field color flutter. A 12-bit, 54MHz video D/A converter offers unexcelled picture quality, according to Vic Pacor, president of the Sony Home Network Products Group. The player can be calibrated for individual DVDs, and optimized for material that originated on film rather than on videotape.

Sony has also introduced the industry's first SACD 5-disc changer, due in November at about \$1200 retail. The SCD-C333ES is said to "incorporate many of the resident technologies found in Sony's 'reference standard' SCD-1 and SCD-777ES, such as a Direct Stream Digital (DSD) decoder, current pulse D/A converter, and 24-bit variable coefficient filters." The changer has both optical and coaxial digital outputs (for CD replay only) and a newly developed single-lens pickup with twin laser optics for compatibility with SACDs and standard CDs. A frame-and-plate chassis and rigid aluminum faceplate are said to minimize the deleterious effects of vibration.

Rounding out Sony's new hardware line are two compact DVD/CD "mega-changers," each with a 300-disc capacity. Claimed to be "40% smaller" than current mega-changers, the DVP-CS860 and DVP-CS870D will also

ship in November, priced at \$599 and \$799, respectively. The two machines will play DVD movies and standard CDs, but not SACDs. The DVP-CS870D includes inboard decoding for Dolby Digital and DTS surround sound. A "disc explorer management system" is said to make storing, cataloging, and accessing a movie-and-music collection an easy task.

Not to be outdone, Philips Consumer Electronics introduced a multichannel SACD player with DVD-Video functionality. The SACD1000 will play SACDs, DVD-Vs, VCDs (Video Compact Discs, a format originally known as CD-V, common in Asia and popular with some video hobbyists), CD-Rs, and CD-RWs. Supported digital audio data formats include DSD, PCM, MPEG2, AC-3, and DTS. "We are very excited by the sound quality offered by SACD," said Frank Pauli, general manager and VP of Philips Disc Systems. "Everybody who hears the pure and realistic sound quality that SACD delivers is captivated. Our SACD player will have six-channel output and will include DVD-Video, which we believe will be a very attractive combination for everybody who likes to enjoy the best in sound and video." Due at the end of this year, the SACD1000 will retail at approximately \$2000.

UNITED KINGDOM **Paul Messenger**

British hi-fi electronics specialist Arcam holds press conferences so seldom that when they do, the agenda must be very significant. The occasion was the launch of Arcam's new DiVA range: 11 new electronics components that will form the backbone of Arcam's portfolio for the foreseeable future.

It's less than a year since Arcam

Calendar

tation on The Joy of Analog. For information on this event and monthly meetings of the *Musicalaudiophile Society*, the *Audiophile Society*, and the *Gotham Audio Society*, call David Nemzer at (718) 237-1094.

● For information on the monthly meetings of the *Long Island Music and Video Society*, call Lee Grosberg at (516) 239-9004.

● For information on *Audio Syndrome* (East Meadow), a monthly club catering to obsessive-compulsive audio neurotics

from September through June, call Roy Harris at (516) 489-9576.

VERMONT

● *Sound Essentials* (1 Steele St., #108, Burlington) is pleased to announce its grand opening. SE is Vermont's exclusive dealer for **Arcam FMJ**, **Audio Research**, **Basis**, **Benz-Micro**, **NAD Silver**, **ProAc**, **Richard Gray's Power Company**, **TARA Labs**, **Zoethecus**, and other high-performance audio and video lines. For more

information or to schedule a private audition, call (802) 863-6271 or visit www.soundessentialsvt.com.

WASHINGTON

● The *Pacific Northwest Audio Society* meets the second Thursday of each month. Usual start time is 7:30pm at 4545 Island Crest Way, on Mercer Island. For more information, call Tom at (425) 481-8512 or Earl at (206) 907-8026



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launched its "premium" FMJ range, heavily based on the longstanding Alpha-series components but with some extra tweaking and a much classier suit of clothes. Reaction to the FMJs has been very positive around the world (especially in Japan), which must bode well for the new DiVA models: they borrow some FMJ styling cues, notably the chunky cast faceplates in silver or black (the latter primarily for the US market, which seems to be lagging the rest of the world's trend back toward silver).

DiVA stands for "Digitally integrated Video and Audio" — clearly, Arcam sees the long-term future of its midprice sector of the market very much in terms of multichannel A/V. Still, at the press conference the company was at pains to emphasize its continuing support of two-channel technology, and its overall commitment to maintaining superior standards of sound quality.

Although the Alpha series will continue in production, these budget models will be assisted by some hefty price cuts, the DiVA range effectively comes in as the Alpha series' long-term replacement, and promises much more than mere cosmetic improvements.

Pride of place goes to Arcam's first DVD-Video player, the DV88 (£900). The company's managing director, John Dawson, discussed the trials and tribulations of getting a DVD-Video player into production. With some 14 different technology licensors to deal with, he reckoned the "manufacturer entry cost" was eight times what was required to get into CD some 15 years ago.

Rather than relying on an OEM supplier, Arcam decided to build its DVD player "from the ground up." That still meant working with one or another partner for the supply of core components, such as the DVD decoder. Arcam went to Zoran for that, and designed a player with more than half an eye toward CD/stereo replay and upgradeability. For example, separate, asynchronous clocks for the video and audio sections deliver a jitter performance far superior to the DVD-V norm. The DV88's construction is modular, with software in flash memory to aid updating, the intention being to offer owners a new board for DVD-Audio playback in mid-2001.

There are also two DiVA CD players (the CD72 and CD92), three integrated and two power amplifiers, an AM/FM tuner, and the company's first A/V receiver (the AVR100), plus three new custom-tooled remote handsets. The CD players are based on the Alpha 7 and

9, the CD72 incorporating Sonotech chassis damping and new output filtering, while the CD92 incorporates dCS's Ring-DAC technology introduced in the Alpha 9 (and used in the FMJ CD23).

The amplifiers, however, use all new circuitry. The A65, A75, and P75, with new Sanken "Audio" output devices, promise lower distortion and noise. The top-of-the-line A85 and P85 (£700 and £500, respectively) are unconventional in their use of current rather than voltage feedback. Their signal paths are DC-coupled with unintrusive servos,

Arcam sees the long-term future of its midprice sector of the market very much in terms of multichannel A/V.

the layouts are symmetrical, the output impedance very low, and the rated power is 85W into 8 ohms or 130W into 4 ohms. A powerful microprocessor controller and fluorescent display provide extra functionality, allowing source sensitivities and tone control (or bypass) settings to be assigned to each of the seven inputs individually, and modular construction ensures that future developments can be accommodated.

US: BOSTON

Jon Iverson

CD changers holding hundreds of discs at a time have found their place in a sizable percentage of consumer homes, and have proven especially useful in the custom installation market. Fans of these mega-changers love to drop their discs into one place, never having to crack open a CD case again. Drawbacks, however, include not being able to easily move the disc from home to car or portable, and the mechanical whirring and clanking the machines make as they slowly plow through the user's playlist.

In June a new company, Lydstrom, announced the official launch of the SongBank SL CD Memory System, described as the first product in "an entirely new category" of home audio technology intended to replace the mega-changer and open new vistas of audio storage and playback opportunities. The Boston-based company says that the SongBank SL can store up to 7000 songs on its internal Quantum

Quick View 10.8 gigabyte hard drive using Lucent's ePAC encoding algorithms. According to Lydstrom, the SongBank can also organize music according to song, album, artist, mood, and genre, and that users may create an unlimited number of playlists with the remote or using an on-screen display when the unit is hooked up to a TV.

Lydstrom is initially planning three versions of the SongBank, with larger HD capacity and support for multiple streams or "zones" of audio slated for the next two products planned for late Fall 2000. The current model, the SongBank SL, retails for \$799.95 (including shipping) at www.lydstrom.com, with a 30-day, full refund return policy. Lydstrom says it will also provide customers with free software upgrades designed to enhance the product's capabilities in the future. The company says it is also working to build a network of select e-tailers and custom installers as well as brick and mortar retailers, targeting September for in-store distribution.

CDs are inserted into the SongBank and "ripped" to the hard disc in about one-quarter of their actual playing time. Lydstrom says that users can choose from four compression rates on a track by track basis: "Pure CD" at 1.4Mb/s ("Red Book" audio) for about 350 songs; "CD Transparent" ePAC compression at 128kb/s for 3500 songs; "Near CD" (the default setting) ePAC compression at 96kb/s for 5000 songs; "High Capacity" ePAC compression at 64kb/s for 7000 songs. The company says that it is also considering adding a mode between "Pure CD" and "Near CD" that will store 700 songs with loss-less compression.

Lydstrom's Ashwin Kochiyil Philips explains that "we chose Lucent's codec because sound quality is very important to us. It wasn't about building an MP3 player — it was about 'more from your music with less effort.' This means, among other things significantly better sound quality than MP3, which tends to drop the highs and lows, and compresses and muddies the imaging. It also means that we have better compression ratios. That is why we can fit 350 hours of audio on a 10.8 gig drive."

For consumers needing more capacity, Lydstrom says that SongBank Expansion units that can each store up to 18,000 songs at maximum compression and are connected via the built-in USB ports. Two expansion units can be connected to the base unit and with the addition of an "expansion hub," up to



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100 units (18,000,000 songs at high capacity or 900,000 songs in "Pure CD" mode) can be added. Expansion units are planned for release before the end of the year.

But the biggest opportunity for Lydstrom may be exploiting the Internet for streaming audio directly into the box. Although most commercially recorded music isn't yet legally available for Internet download via the ePAC format, the SongBank SL is equipped with a 56k-modem and Ethernet card. The company says that a simple software upgrade will enable this function, planned for no later than June 2001. Lydstrom adds that the SongBank is also designed to be software-upgradeable to support new features, database updates, and new codecs among other things.

THE INTERNET

Jon Iverson

According to a new report, the number of adults going online to access music-related content has exploded, increasing 48% between December 1999 and March 2000. These numbers are based on recent findings released by market analysts Cyber Dialogue, who say that "The dramatic growth in online music users can be attributed to the media's newfound obsession with Napster, Gnutella, and MP3. When combined with a marked increase in online music offerings and the proliferation of file-sharing software, the increase in demand for online music makes perfect sense."

Cyber Dialogue's Peter Clemente adds that "Music users also have deeper pockets than their average online counterparts, spending up to \$100 more per year. On average, online adults spent \$509 online in the past 12 months, while the average music user spent \$610 online for the same period." The survey also shows that, once online, music users are more likely than average users to employ a variety of enabling software programs such as Real Audio, Shockwave, or MP3 in order to access entertainment content.

The kids might be a lost cause, with Napster their preferred method for downloading pirated tunes, but the big labels are clearly going after the baby boomers as they announce more artists and songs being offered for paid downloading. Case in point: Virgin/EMI and Atlantic Records are making songs available from boomer favorites David Bowie and Led Zeppelin. EMI had previously announced that it would be putting more than 100 albums online for sale last July, including works from

Pink Floyd and Frank Sinatra.

Virgin, a label controlled by EMI, says that among the Bowie titles being released are: *Aladdin Sane*, *Diamond Dogs*, *Earthling*, *Heroes*, *hours...*, *Hunky Dory*, *Let's Dance*, *Lodger*, *Low*, *The Man Who Sold the World*, *Never Let Me Down*, *Outside*, *Pin-Ups*, *The Rise & Fall of Ziggy Stardust*, *Scary Monsters*, *Space Oddity*, *Station to Station*, *Tonight*, *Young Americans*, and *Tin Machine*.

Additional artists and songs from EMI's extensive catalog are expected to be added in the coming months. The company says that the downloads are available at over 800 Internet retailer sites, including Amazon.com, Tower Records, and CDnow.

Where EMI is charging for fans to obtain its music online, as part of a Liquid Audio campaign two Led Zeppelin tracks, "All My Love" and

The number of adults going online to access music-related content has exploded, increasing 48% between December 1999 and March 2000.

"Rock & Roll," are available as free digital downloads, added to a list spanning 1400 Liquid tracks.

BMG Entertainment, the music and entertainment division of Bertelsmann AG, brought its own digital downloads to the Internet in September. The company said that it would start with approximately 50 songs and 50 complete albums, to be made available via several retail Web outlets at prices ranging from \$1.98 to \$3.49 per song and from \$9.98 to \$16.98 per album.

Of the big five music companies—BMG, EMI, Universal, Sony, and Warner Bros.—only Warner has not announced an online strategy. Time Warner, still trying to merge with AOL, says it will detail its plans later this year. BMG's record labels—Arista, RCA Music Group, RLG, etc.—are expected to be offered online, with artists represented including Whitney Houston, Santana, and Toni Braxton, among others.

BMG's Sami Valkonen explains why his company is using a pay-per-song/album system and not a subscription model for online downloads: "We don't

really believe in the all-you-can-eat model for a couple of reasons. One is that it doesn't give you the advantage of mass customization that allows you to target certain music to certain customers. Also, our research shows us that customers will download all the music they want in the first two months and then not use it very often after that. And unless they proactively cancel the service, they're being charged for something they don't get much value from. That's not very friendly to the consumer."

BMG has also announced that it will work with Digital Island—which bills itself as an "e-business delivery network" for hosting, networking, and content-delivery services—for digital distribution of their music to retailers and consumers. BMG says it will host its music content in Digital Island's secure data centers, which, Digital Island claims, are capable of simultaneously serving 7.5 million users.

THE INTERNET

Barry Willis & Jon Iverson

There is a war of words-and-numbers being waged in the struggle over copyright infringement and the illegal copying of music. Downloading music is a boon to the music industry, claim some, because it leads to increased sales of CDs. Others present statistics that undeniably prove that downloading will be the death of the music business.

Who is right? As in most disagreements, the truth probably lies somewhere between the two most diametrically opposed views. On June 14, the International Federation of the Phonographic Industry—the global equivalent of the Recording Industry Association of America—trotted out figures that seemingly prove that the industry is losing between 10% and 20% of its income to piracy. (The music industry enjoyed a sales growth of 6% in 1999, for a total of \$14.6 billion.) At a conference in London, association officials presented evidence that about 1.4 billion cassettes and 500 million CDs sold worldwide every year are bootlegs. IFPI chairman Jay Berman says that means "one out of every five CDs" reaching consumers is an illegal copy. EMI Recorded Music senior VP Jay Samit claims that if the thousands of audio tracks downloaded for free annually from Napster are worth \$1.50 each, "the loss to our industry is phenomenal."

The threat of CD recorders, one of the hottest selling items in the consumer electronics galaxy, was outlined by Berman in a presentation. His estimate:

a rise from 20 million units sold in 1990–1999 to 100 million by the end of 2000, and a commensurate loss for his industry. The music, film, and television industries have a long history of opposing consumer-level recording equipment, including cassette decks, video tape recorders, and now computers and CD-Rs. The assumption has always been that consumers would use the devices to engage in wholesale piracy.

The industry's biggest unprovable assumption is that people would buy music if they couldn't get it free. That may or may not be the case. A poll released by the Digital Media Association (DiMA) offers a different interpretation of the situation than has previously been put forth: that people who download music from the Internet are more likely to buy CDs later than they would be if they had not heard the music via their computers. The survey says that 66% of all computer-using consumers reported that listening to a song online has at least once prompted them to later buy a CD or cassette featuring the song. Listening habits: 92% listen via desktop computers, 10% use a portable device such as an MP3 player, and 14% use home stereo systems. More than 60% of them say they use the Internet to get to music they can't find on radio. 33% of those who have downloaded music said it made them more likely to buy. 57% said their buying patterns weren't affected, and only 6% of those interviewed said the availability of downloadable music made them less inclined to buy CDs. "Internet music is creating new markets," said Jonathan Potter, the DiMA's executive director.

Market research firm Yankelovich Partners conducted the poll interviewing 16,903 music fans between 13 and 39 years of age in March of this year. It was sponsored by a group of Internet, software and hardware firms, including RealNetworks, Liquid Audio, AT&T's a2b Music, and other digital-media companies who all stand to gain from the growing popularity of digital downloading. The number of visitors to the top 30 Internet music sites grew 19% between November 1999 and April 2000, to 22.8 million, according to Media Metrix. A likely reliable projection: sales of downloadable music will be a billion-dollar business within three years, in the view of Forrester Research.

A similar study by research organization Jupiter Communications also suggested that people who download MP3s buy more CDs. Napster users are "45% more likely to have increased their

music buying than nonusers," according to the survey, which was released in mid-July. According to Jupiter, many music fans want all the recordings of their favorite artists, both bootlegged and authorized; their use of a service like Napster only serves to fuel their enthusiasm. "Because Napster users are music enthusiasts, it's logical to believe that they are more likely to purchase now, and increase their music spending in the future," says Jupiter analyst Aram Sinnreich. If he is correct, Napster and other online music services are excellent marketing tools for the music industry.

Jupiter reached its conclusions after interviewing more than 2200 online music fans about their buying habits.

The record industry's biggest unprovable assumption is that people would buy music if they couldn't get it free.

With the exception of "cash-strapped, computer-savvy" 18-to-24-year-olds (i.e. college students), most said that their music-buying habit increased as a result of using Napster. The student segment of those interviewed averaged less than \$20 per person in commercial music purchases every three months.

Jupiter's and the DiMA's conclusions are opposed to two other recent studies: one by SoundScan that found a decline in CD sales near college campuses, and another by Field Research Corporation stating that 41% of Napster users indicated that the service had replaced some of their CD purchases. The downloading trend has "significantly hurt CD sales," according to a spokeswoman for the RIAA.

Figures presented by various factions, like the conclusions of "science" funded by private enterprise, are best viewed with a bit of skepticism. As the standard disclaimer has it: Results may vary.

UNITED KINGDOM

Paul Messenger

The annual report of the British Phonographic Institute is always worth a quick scan; despite the BPI's pro-music-biz stance, the report's copious statistics provide useful documentation of recent UK trends.

1999 saw the hi-fi separates sector down some 3% by volume, 4% by value

from 1998. Cassette decks and CD players showed the most obvious decline, while MiniDisc and receiver sales were well up. However, no statistics were provided for DVD players, which, judging by the surge in UK sales of the more upmarket receivers, have certainly replaced some CD-player sales. Nor was there any information about CD-R, which, I understand, is gradually catching up with MiniDisc.

Overall music sales rose a modest 1%, this due entirely to the health of the singles market. Classical album sales in 1999 showed a 20% year-on decline, partly because the 1998 figure included a substantial contribution from the *Titanic* soundtrack album. But Classical's 4.0% 1999 market share is still better than 1997's, and larger than those of Jazz, Blues, Folk, and World music put together. And I was a bit depressed to discover that the UK's top-selling jazz album in 1999 was Miles Davis' *Kind of Blue*—I'd have thought everybody must have at least three copies by now!

Accurately defining different popular music genres provides all sorts of difficulties, but the long-term trend across the broad popular spectrum shows a slow but steady decline in Rock, compensated by growth in the Dance and R&B/Hip-Hop categories.

US: ARIZONA

Jon Iverson

Texas Instruments announced August 25 the completion of its acquisition of chip-maker Burr-Brown Corporation in a stock swap. Burr-Brown is highly regarded in the audio industry for its low-noise, high-speed digital/analog converters and digital signal-processing (DSP) ICs. The company also makes ultra-high-quality analog components, a segment of the semiconductor industry expected to grow by 25% in the coming year, according to industry analyst Dataquest.

The Burr-Brown takeover is part of a larger strategy by Texas Instruments to offer a wider range of designs to its customers and to integrate the products of specialty manufacturers. Burr-Brown is especially noted for the expertise of its analog designers, and will continue to operate from its headquarters in Tucson, Arizona.

TAIWAN

Paul Messenger

Judging by our VIP reception, I don't think many foreign journalists visit the Taiwan High End Show. Indeed, we were made so welcome—a Taiwanese lunch is the very antithesis of "fast

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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.

Demonstrably superior quality, along with flexibility, is what Adcom now offers in two significant new components: The GFA-5802 power amplifier and GFP-750 preamplifier.

In the GFA-5802 we chose a classically simple circuit topology. Two high capacity transformers provide superb isolation between sensitive input stages and high current output sections. A massive toroid transformer with dual secondary windings, high current regulators, and enormous quick response storage capacitors provide all the current necessary for unparalleled clarity even under the most difficult operating conditions. MOSFET (Metal Oxide Semiconductor Field Effect Transistor) devices are widely praised by knowledgeable audiophiles for their unique combination of solid state dependability, dynamic capability, and tube-like smoothness. Each channel uses eight carefully matched pairs to produce 300 watts

per channel into 8 ohms and 450 watts per channel into 4 ohms. The GFA-5802 also includes switchable balanced (XLR) and unbalanced (RCA) inputs and dual sets of heavy duty, gold plated, five way binding posts ideal for biwiring.

The GFP-750 is a purely passive attenuator/switcher or, at your option, an active preamplifier. In passive mode, the signal sees only input switching and the high resolution attenuator. In typical Adcom fashion, the GFP-750's massive high current power supply features a large toroid transformer with multiple secondary windings for each channel. Specially chosen storage capacitors insure responsive voltage supply to all active elements. For active gain functions, it offers true differential balanced audio signal paths, with MOSFET devices. The GFP-750 features remote control, balanced (XLR) and single ended (RCA) inputs for CD as well as single ended inputs for four additional line level analog sources. Independent balanced and single ended outputs allow easy interface with almost any amplifier.

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And what's between them.

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food”—that there was hardly time to see the show itself, in Taipei's enormous Asiaworld Plaza Hotel.

A determinedly “free market” economic stance, plus a population of around 22 million, many of them passionate about hi-fi, music, and karaoke(!), is a good recipe for a large, well-attended, well-organized show. My hardback show guide weighed more than two pounds, and confirmed the huge variety of up-market gear now available in Taiwan from all corners of the globe.

However, that could change; the importers I spoke to were gloomy about the future. New legislation that took effect in July requires all electronics imports to carry electromagnetic compatibility (EMC) certification from Taiwanese labs, a costly procedure that is likely to make it unprofitable to import components that sell only in small quantities. This development might well assist the healthy sprinkling of indigenous Taiwanese brands, but the local population seemed very brand-conscious; I don't see the established world names losing their popularity.

American brands seemed to be the dominant force, along with plenty of representation from Germany, Britain, France, and elsewhere. Surprisingly, there was little evidence of specialist high-end Japanese brands.

About half the rooms included some sort of video display—usually of music-with-pictures material—and there was definitely the attitude that such a “combination” approach was an important element in attracting the “MTV generation.”

However, audio-only enthusiasts can take heart from one room I encountered. Labeled **Vintage** and accompanied by an impenetrable language barrier, a little tube amp was driving a fine collection of historic speakers (including Goodmans Axiom 80s, Lowthers, and various Altecs) for an enraptured audience of a dozen or so twentysomethings, all sitting around on the floor.

As I lived half a mile from the hi-fi shop where it was founded, back in the mid-1980s, I was startled to discover that the **Onix** brand, now under Taiwanese ownership, is still very active. I also met an ex-**Triangle** speaker designer, Thierry Comte, who has been working on an interesting speaker for Onix, with such unusual features as little balance weights around the midrange surround. Of perhaps more immediate relevance to the world market was the cute new Micro Utopia and some very mean-looking subwoofers from **JMLab**, and a

whole cluster of even cuter-looking offerings from the **Blue Room** people.

Such a snapshot view must suffice for what was, ultimately, a provincial event largely unattended by major industry figures. But I was heartened by the enthusiasm of exhibitors and visitors alike; the overall mood of the show left me feeling comfortable that, in this corner of Southeast Asia, serious hi-fi remains a valued element of the quality of life.

US: MINNEAPOLIS **Barry Willis**

Based on information we had received in a press release, we mentioned in the October issue's “Letters” (p.11) that Wadia Digital Corporation had been purchased by a Michigan-based compa-

Shared Ventures is now the legal owner of the assets of Wadia Digital Corporation.

ny. However, it was announced at the end of August that the public auction of Wadia's assets had been postponed for at least two weeks, according to an employee of the Minneapolis law firm Siegel, Brill, Greupner, Duffy & Foster, P.A., which was handling the liquidation.

The auction took place in Minneapolis on September 12, with the result that Venture capital group Shared Ventures is now the legal owner of the assets of Wadia Digital Corporation. Wadia's majority shareholder, Shared Ventures, acquired the company's name, intellectual property, and physical inventory.

As majority shareholder, Shared Ventures had previously controlled the stock of Wadia but did not own the company—a distinction probably incomprehensible to most people outside the legal profession. Owning stock gives shareholders a voice in the operation of a company and certain rights regarding the election of officers to its board of directors, but does not give them the rights to any proprietary intellectual property or brand name. For Shared Ventures, acquiring Wadia's assets and name is the first step toward recovering some value from Wadia by subsequently selling it to another manufacturer or startup venture, who can then legally use Wadia designs. Whether minority shareholders will be able to recover any investments they made in the company isn't clear from the infor-

mation available as of September 14.

No mention was made of the immediate fate of loudspeaker manufacturer Hales Design Group, which was acquired by Wadia late last year. As part of Wadia, Hales, too, is now owned by Shared Ventures, which will presumably want to extract maximum value from the Hales brand name and designs as well.


Another company whose marketing failed to keep pace with its engineering advancements was Kinergetics Research, which quietly closed its doors in August. (As of September 14, no official notice had been posted on the company's website.) More news on the fate of Kinergetics can be found on www.stereophile.com and will appear in the December *Stereophile*.

THE INTERNET **Jon Iverson**

The world's largest Internet service provider has decided to forgo an MP3 search feature until it figures out how to distinguish legal recordings from illegal ones. America Online made the announcement August 11 after discovering that the feature, which it hoped would enhance its Winamp site, might encourage piracy of copyrighted recordings.

AOL had wanted to add a music-search function, but has postponed the project until a copyright-secure system can be developed. “Now that it's up, we see we don't have an efficient process for distinguishing between legal and illegal MP3s,” said AOL spokesman Jim Whitney. “Until we figure out how to address this, we're going to take it down.”

Whitney says his company made the decision without outside pressure. Earlier this year, AOL announced its intention to acquire media conglomerate Time Warner, parent company of the Warner Music Group, a litigant against both MP3.com, the music uploading-and-archiving site, and Napster, the music-sharing site. Warner's interests in no way affected AOL's decision, Whitney emphasized.

Interestingly, the Gnutella per-to-peer file-sharing utility was developed by AOL's Spinner division. This Napster clone now exists as shareware because the original site where it was first posted was dismantled. A startup company in Troy, New York has developed a file-sharing software it calls Aimster, and which can be incorporated into AOL's Instant Messenger feature and used much the way Napster is used elsewhere. AOL disavows any connection with Aimster, but hasn't found a way to force these particular cats back into the bag. 

SONUS FABER CLASSIC LINE



Of the many speakers offered during the past decade, perhaps none have had as dramatic an impact on the design landscape as the original Electa Amator. Introduced in 1988, it went on to become a true classic and a design icon — imitated by many, copied by none.

Now, after ten continuous year of production, the original steps aside for the Electa Amator II. Its classic styling has been gently updated to reflect a decade's experience. Softly time aligned, the newer model offers greater placement flexibility providing superior results in a variety of in-home settings.

Retained are the core components; the brutally expensive drivers, the brilliantly honest 1st order crossovers, and cabinets handcrafted by Old World craftsmen from 24 individual staves of walnut.

The Electa Amator concept begets a new, less expensive model; Signum™. At half the price, Signum is ideal for medium-sized rooms and budgets. The Musica™ integrated amplifier is used by Sonus faber to provide a musical reference during product development.



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Can an \$18,000 power amplifier be a bargain?

Can an \$18,000 wristwatch?

After a certain point, the usual value-for-money considerations don't apply. With amplifiers, I'm not sure where that point is. But, for me, the Boulder 1060 is *hors de categorie*, as the French hi-fi scribes like to say: "out of category."

Nevertheless, I like to escape now and then, as I did with the Lamm Industries ML2 monoblocks and the \$15,000 McIntosh MC2000 Commemorative (in the July '99 and November '99 issues, respectively).

Hell, I could have gone crazier still: \$59,000 for a pair of Boulder's 2050 monoblocks. Twenty-five years ago, that's what I paid for a house. Think of the car you can buy today for 60 thou.

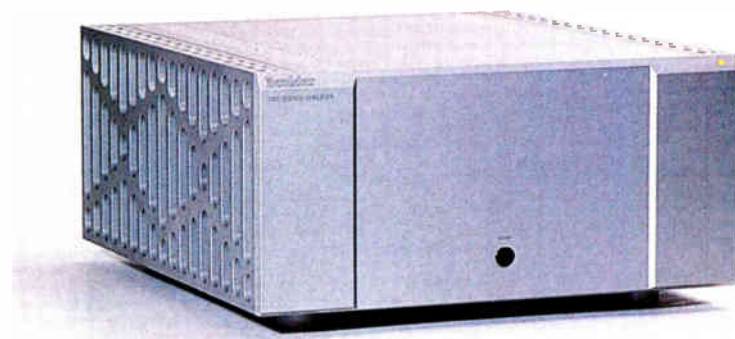
That \$60,000 car can be leased, of course—why tie up all that capital? Maybe high-end audio dealers should offer equipment leases. I can see the ads now: "Lease a pair of Boulder 2050s for a rock-bottom price: only \$500 down and \$399 a month."

I'm not sure what my friend Marc paid for his Boulder 500AE amplifier—well under five thou. Marc has owned his amp for more than 10 years. Two years ago, he sent it back to the factory for servicing and updates. It sounds better than ever. Has he gotten value for his money? You bet!

I don't see too many Boulder 500AEs turning up on the secondhand market, but when they do, they seem to go for between \$2500 and \$3000, depending on age and condition. If you're lusting after a Boulder and can't swing 18 thou (neither can I), you might search for a used 500AE. The amp, now discontinued, was in production for 15 years with no major design changes.

Marc is steadfastly loyal to his 500AE. "Why should I bother with tubes?" he asks, rhetorically. He has a point.

Jeff Nelson, president and chief designer of Boulder, has steered a steady course with solid-state—one of a very few manufacturers to do so, in my opinion. In the 500AE, and now in the 1060, he has avoided the sterility associated with certain solid-state amps. He's also avoided the hazy, syrupy, fake-



Boulder 1060 power amplifier

tube quality I've heard from others.

Of course, Jeff says he designs his amps to be neutral. But *all* amplifier manufacturers say that (the single-ended triode contingent excepted). To paraphrase George Orwell in *Animal Farm*: All amps are neutral, but some are more neutral than others. The Boulder 1060 is more neutral than others.

But I'm getting ahead of myself.

**To paraphrase George Orwell in *Animal Farm*:
All amps are neutral,
but some are more
neutral than others.**

Marc's Boulder interested me in the marque, so to speak. So when I heard that Boulder was coming out with a new stereo amp—more "affordable" (ahem) than the 2050 monoblocks—I quickly called Bruce van Allen, of Boulder, to see if I could have a listen.

"It's \$18,000, Sam," said Bruce.

"I wish you had something less expensive."

"If you wait, we'll have a replacement for the 500AE—less power than the 1060, of course. But if you want to try

the 1060 in the meantime, I'm game."

Wow! It's not every day that I get to hijack such an expensive piece of gear from Jonathan Scull or another member of the *Stereophile* gang. This was rather bold on Boulder's part, considering my Cheapskate origins and continuing propensity to recommend less costly gear.

The Boulder 1060 is not the kind of amp you can ship UPS. Bruce delivered it himself, as he made the rounds of the Northeast in the van Allen van. It was late winter, he'd been schlepping throughout the region, and he'd caught a touch of the flu. While in this feverish condition, he got the idea that he could expedite the setup of my amp by removing, in advance, the screws that held the bottom of the wood packing crate. He could remove the crate from his van, holding it by the bottom, of course; then set it on my garage floor, lift off the top of the crate, and—*voilà!*—there would be the 1060, in all its naked glory. We would then haul it upstairs. (It absolutely takes two people.) Good idea, no?

Ahem. As Bruce now says, "The best-laid plans..."

He opened the door of his van and eased the crate to the edge of the rear compartment. As he did so, the weight of the crate shifted... and Bruce was left holding only the top of the crate as the 140-lb Boulder crashed to the concrete floor.

THWANKK!!!

"B-stock," I said, using the industry term for a slightly blemished or damaged unit.

"It is now," he replied.

How's that for Boulder's luck—and mine? Here I'd been looking forward to hearing the most expensive solid-state amplifier I've ever had in for review, and the manufacturer drops it. Seldom have I heard a more alarming—or disheartening—sound.

Fortunately, the amp survived—save for some slight damage to the chassis and the precision alignment of its interlocking parts. A module inside had joggled loose, but Bruce easily set it back into place. Both of us breathed easier.

"The amp's bulletproof," I said. "Bruceproof."

Later, after we'd listened for a while, Bruce asked, "Do you *have* to write that this happened? Everybody in the industry will be repeating this story for years," he said, ruefully.

"You know our policy, Bruce. Full disclosure."

Too bad about that slight damage to the chassis; the Boulder 1060 is the most beautiful solid-state amp I've had in my listening room.

The construction quality is awesome—and durable, as Bruce proved. Note the absence of rack-mount handles on the front or rear—it does wonders for the amp's appearance but does make it somewhat difficult and awkward to transport.

As I said, the chassis is made from precision-machined interlocking parts. This includes the heatsinks, which look like part of the chassis rather than something that was stuck on. They're solid and anti-resonant—not those flimsy fins that *ping* when you flick them with your fingernail.

And no sharp edges. This is no small matter to someone whose legs bear the scars (no kidding) of previous encounters with sharp heatsinks and amplifier faceplates. Remember, an amp of this size will likely sit on or close to the floor. Sharp heatsinks are a hazard to children and pets, and, in my view, unacceptable. I'm surprised manufacturers aren't more concerned about product-liability lawsuits.

About those heatsinks (they're beautiful, like the rest of the amp)—they didn't heat up very much. The Boulder 1060 ran only slightly warm to the touch—this in summer, without air-conditioning. This is *not* one of those amps (solid-state or tube) that will turn one's listening lair into a sauna.

The top plate slides off, allowing the

owner to admire and show off the amplifier's innards—and, more to the point, allowing easy access for service. The heatsinks and sides, too, are easily removed without hours of labor. Inside, the surface-mount modules can be removed for replacement or repair. I'd guess that the 1060 can almost always be serviced and/or updated in the field.

Of course, this level of cosmetic finish (it's exciting just to *feel* the 1060) and precision machining is reflected in the amp's \$18,000 price. But you do get something for your money besides great sound: pride of ownership. The Boulder 1060 puts most other high-end solid-state amps to shame, appearance-

The Boulder 1060 puts
most other high-end
solid-state amps to
shame. . . . It's a jewel.
A work of art. Exquisite.

wise; for that reason alone, I wouldn't buy such an amp without seeing, touching, and listening to the Boulder. It's a jewel. A work of art. Exquisite.

And you're not just buying cosmetics. Inside, there are 56 bipolar output transistors: 28 per channel. This means, among other things, that the output devices are very conservatively driven and should last a very long time. The amp is rated to deliver 300Wpc into 8, 4, or 2 ohms, with 800W peaks into 4 ohms, 1600W peaks into 2 ohms.

The 48 filter capacitors (with a total of 187,200 μ F) offer a "distributed" low-impedance power supply. Better a lot of small caps than fewer big ones—it results in a faster "recovery time," and no "ghost images." The twin power transformers are encapsulated and mechanically shielded.

On the back of the chassis are special, nutlike speaker-binding posts that can be finger-tightened without a tool. These posts can take spade lugs or bare wire. No, they won't take bananas.

Power-cord buffs (and there are some out there) will be out of luck: the 1060 does not use a standard IEC connector. Instead, it comes with a very beefy power cord that connects to the amp via a connector that looks like a large plastic cup.

Inputs are balanced-only, but adapters are available from Boulder for use with single-ended RCA inputs. The

output stage operates in a dual-differential mode said to offer "near perfect" common-mode rejection of noise.

For a brief time I had the use of a balanced Boulder L5AE line-stage preamp, but Bruce wanted it back. I switched to the unbalanced Musical Fidelity A3CR and Aloia PST 11.01 preamps. Also in my system were the Cary CID-303 CID player and AcousTech PH-1 phono stage. Speakers were mainly the Verity Audio Parsifal Encores, but also the B&W CDM1 NTs (see below), Triangle Antals, and JMLab Micro Utopias.

The Verity Audio Parsifal can suck up some power—especially in the mid-bass, where, last month, the speaker sounded somewhat thin and lacking in dynamics with the Musical Fidelity A3CR. But with the Boulder, balanced inputs or not, the sound was as exquisite as the amp's appearance: detailed, dynamic, controlled, with a harmonic presentation that rivaled tubes at their best. Do I miss single-ended triodes? Less so when I have amps in-house like the Boulder 1060—or the Musical Fidelity A3CR, for that matter.

Maybe my biggest surprise came when I tried B&W's new CDM1 NT speakers (not that anyone other than JA would likely mate an \$18,000 power amp with \$1200/pair speakers). The B&Ws became explosively dynamic. I intended to listen to this combination for only a few hours, but ended up auditioning it for two weeks. The easy-to-drive, 91dB-sensitive Triangle Antal xs, though, just didn't need the power. Nor did the 90dB-sensitive JMLab Micro Utopia.

Another thing about the Boulder 1060: speed. Ever notice how some big amplifiers (especially solid-state ones) can sound a little slow—as if held back by their massive power supplies? Not so

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the 1060. The amplifier was breath-takingly fast, bracingly clean, and harmonically pure. Hey, compared to the \$59,000 Boulder 2050s, this might be a bargain that gets you very close to the 2050s' sound for a fraction of the price.

In short, the Boulder 1060 is an outstanding amplifier. It held its own against the Mac 2000 Commemorative or the Lamm ML2 monos. No, the 1060 didn't have the liquidity of the Lanuns, that same SET immediacy. But the Lamm is rated at 18W; the Boulder, at 300Wpc, is a lion.

Does one *need* such awesome power?

Depends. When Larry Archibald auditioned the Boulder 2050 monos, he discovered, much to his surprise, that his Thiel CS5s could suck all that power out of the amps—1000Wpc. To be sure, the Thiels like a lot of power, and LA's cavernous room makes further demands on an amplifier.

But even in my much smaller and cozier listening room, speakers like the Verity Parsifal can benefit from power aplenty. When I paired the Boulder 1060 with the Parsifal Encores, I heard total control in the bass—a sense of dynamic ease even at moderate volume levels that comes only from having plenty of power in reserve.

As Antony Michaelson, of Musical Fidelity, noted last month, speakers can drain an awful lot of power, especially in the bass. And when an amp runs out of power, it doesn't necessarily clip in an obvious way. Rather, as an amplifier runs out of steam, dynamics compress and the soundstage begins to collapse. Typically, the sound hardens and coarsens. You may notice listening fatigue rather than catastrophic clipping.

But doesn't power corrupt? Hasn't Sam said so? And Nietzsche, too? (Actually, it was Lord Acton who said, "Power tends to corrupt; absolute power corrupts absolutely.")

Power often does. But not here. With the Boulder 1060, you *can* have it all: awesome power, headroom, dynamic drive, control, detail, sweetness, sensuality. This is what you pay \$18,000 for. If you want it all and can afford it, the Boulder 1060 is worth the money.

Don't forget, too, that Boulder has a history of keeping amps in production for a very long time without major design changes. That should help your amp hold its value. Boulder also has a history of *not* gouging when it comes to upgrades. In other words, you may pay a lot up front, but you get it back in the long run.

So... would I buy this amp if I had the 18 thou?

Again, depends. I can't think of another amp, at or near this price, tube or solid-state, that I would recommend more.

But I would prefer a somewhat smaller, less expensive Boulder—a big stone, a large rock, a replacement for the 500AE. My friend Marc would like one too—as, I'm sure, would legions of other

As an amplifier runs out of steam, dynamics compress and the soundstage begins to collapse.

loyal Boulder fans for whom \$18,000 is, alas, *hors de categorie*. Fortunately, such an amp may soon be forthcoming.

Until it does, the Boulder 1060 might remain here as the reference amp in my main system—at least until Bruce picks it up. (I can't lift it, let alone crate it, without assistance.) If you, too, are looking for a great solid-state reference amp and price is no obstacle, then I highly recommend it. I look forward to keeping it in my *seestem* for a while.

B&W CDM1 NT loudspeaker

What's the opposite of *hors de categorie*? *Dans le categorie*? J-10 can ask K-10.

The B&W CDM1 NT speaker is more down-to-earth than the Boulder.

As regular readers know, the B&W CDM1 SE, like the CDM1 before it, has been one of my favorite speakers (a favorite of John Atkinson's, too) and a top *Stereophile* recommendation. It's a speaker I often recommend to non-audiophile friends and acquaintances for high-end sound at a considerably less than high-end price.

I remember JA's initial review of the CDM1 (*Stereophile*, June 1996), in which he compared it to his then-reference, the B&W Silver Signature. JA was impressed by how much of the sound of the Silver Siggies he heard for a fraction of the price.

Never content to leave well enough alone, B&W improved the speaker still further with the CDM1 Special Edition, or SE—better definition, more detail, more extension in the treble.

Now comes the CDM1 NT. The NT stands for "Nautilus Technology." If you're wondering what the rest of the alphabet soup stands for, here goes: B&W originally stood for Bowers & Wilkins, while CDM stands for Compact Digital Monitor.

Like other speakers in the new NT

series, the CDM1 NT incorporates a version of B&W's proprietary, "tube-loaded," teardrop-shaped Nautilus tweeter. You probably know the story of this tweeter from *Stereophile* reviews of earlier B&W speakers, so no need to dwell on it here. Tube loading is said to absorb unwanted radiation from the rear of the tweeter diaphragm, for clearer, more focused sound.

Although they were candid enough when I asked, B&W did not go out of their way to state in their press release or product literature that this is not quite the same Nautilus tweeter as is found in the 805N. According to Chris Browder, B&W's executive VP, the CDM1 NT tweeter's voice-coil is wound on an aluminum former, using conventional rounded copper wire. The tweeter in the 805N is "edge-wound" on a former of Kapton T—a high-tech plastic—using more expensive square-section copper wire. Because the squared copper wire has more surface area, you lose a little



B&W CDM1 NT loudspeaker

sensitivity. The sensitivity of the CDM1 NT is given as 88dB/2.83V/W/m, while the sensitivity of the 805N is also given as 88dB, so this is no big deal.

The CDM1 NT retails for \$1200/pair (add \$350/pair for CDM1 NT

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stands). Its dimensions are 15.5" high by 8.7" wide by 11.4" deep, and the speaker is available in three wood finishes: black ash, natural cherrywood, and red-stained cherrywood. While the cabinet is nicely finished and sturdily braced, this is not the more elaborate Matrix T bracing provided with the 805N, and the Nautilus tweeter is not mounted on top in open air.

Instead, the Nautilus tweeter extends from the top of a cutaway in the front baffle. The Nautilus tube is set within the cutaway, partially covered by rubbery, anti-resonant polyethylene.

I found the CDM1 NT quite handsome, with or without the grille. The grille doesn't cover the Nautilus tweeter, which is protected by a nonremovable wire-mesh covering. But I did lose some midrange clarity with the grilles in place.

My CDM1 NTs came with foam insets plugging the ports, which are dimpled, like a golf ball, to prevent "chuffing." I generally preferred the speakers without the insets—the bass was richer, riper.

How about an amp?

The SET set should look elsewhere. The CDM1 NT liked some power, and seemed to thrive on the solid-state variety. Because the speaker is voiced so sweetly to begin with, I didn't miss tubes—single-ended triode or otherwise. To put it another way, with the CDM1 NT, I didn't feel a need for a SET amp—or any other tube amp.

B&W recommends a minimum of 50Wpc. But this, of course, depends on room size, listening levels, and your distance from the speakers. I gave them at least 100Wpc of amplifier power—from, among others, the Musical Fidelity A3CR, the McCormack DNA-125, and the mighty Boulder 1060. The Boulder, as one might expect, crushed the competition in terms of bass response and dynamics.

The speaker's nominal impedance is given as 8 ohms, with a minimum of 4.6 ohms. The 6.5" Kevlar bass-midrange driver crosses over to the 1" Nautilus metal-dome tweeter at 4kHz. The frequency response is specified as 60Hz–25kHz, ± 3 dB on reference axis. (B&W's CDM NT series also includes two floorstanders: the CDM7 NT at \$2000/pair and the larger, floorstanding CDM9 NT, \$2700/pair.)

So how does the CDM1 NT compare with the CDM1 SE?

It's been a while since I had the CDM1 SE in my system, so this is from memory. But I think the CDM1 NT gave me still greater top-end openness,

airiness, and clarity. Its midrange and lower treble were voiced very sweetly, in the B&W manner, which made the CDM1 NT a good choice for lovers of classical music. The bass was surprisingly good for such a small speaker, extending well below 60Hz in our living room. Deep bass, obviously, was absent; you might want to use a subwoofer.

Not that I'm much into boogying, mind you. My tastes run to chamber

**Because the B&W
is voiced so sweetly to
begin with, I didn't miss
tubes—single-ended
triode or otherwise.**

music, opera, and popular music of the 1920s and '30s. But I did find that the CDM1 NT was just a tad slow rhythmically—until I switched from the 125Wpc Musical Fidelity A3CR power amplifier to the mighty 300Wpc Boulder 1060. Then the CDM1 NT sprang to life in a quick, explosive dynamic way. I immediately put on some good jazz recordings.

So perhaps what it takes to make these speakers jump is a lot of amplifier power—200Wpc or more. If that's the case, the CDM1 NT is not alone. Quite a few small speakers are like that—more thirsty for power than some larger speakers.

As for this less-costly version of the Nautilus tweeter, I didn't think it was quite the equal of the version I heard on the 805 and 803 Nautiluses (I reviewed the 803 last March): a little less refinement, a tad more edgy. But it's only fair to put this in context: The CDM1 NT is a \$1200/pair speaker.

Certainly the CDM1 NT is enough of an improvement over the CDM1 SE to keep the speaker in Class B of *Stereophile's* "Recommended Components." If the 805N is at the top of the Class B, then the CDM1 NT is somewhat lower down. (I know—we don't rank speakers within a class.) In any event, a Class B (limited low-frequency) speaker for \$1200/pair is a bargain.

Very impressive performance for the money, terrific quality of cabinetry, and handsome appearance. But if you have the money, be sure to audition the speakers in B&W's more expensive 800 series. You pay more, but you get more—somewhat more resolution, delicacy, and refinement. S

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Analog Corner

Michael Framer



First, let's throw egg on a few faces. Due to a communications screw-up, I passed on to you some wrong and incomplete information about the workings of the Lyra Helikon cartridge in my August 2000 "Analog Corner." Without assessing percentages of blame, let's just say that the three likely suspects (manufacturer Scan-Tech, American importer Immedia, and yours truly) accept full responsibility for the misinformation and miscommunication. I'm being generous here by including myself, but hey, you know me. (Actually, you don't, which is why I can claim to be generous.)

To correct a few errors and add to what I wrote previously: Scan-Tech's design goals for the Helikon were to: 1) maximize cantilever system-mounting rigidity; 2) design a stable, symmetrical, and linear magnetic system; and 3) achieve higher output while surpassing the sonic performance of the model the Helikon replaces, the Clavis D.C.

Like the generators of the Clavis D.C. and Parnassus D.C.t, the Helikon's is integral to its mounting system, which is made from "one of the hardest aircraft-grade alloys available" and finished with clear lacquer. This mounting system ensures maximum rigidity and machining precision. The rear of the cantilever assembly is actually bolted into the cartridge's main structure, which helps dissipate vibrational energy and prevents same from being reflected back to the coils. Most other manufacturers glue or otherwise attach a finished assembly into a prefab housing.

Scan-Tech claims to have gotten closer to Design Goal No.2 than ever before by eliminating as much conductive material as possible from the vicinity of the generator and gap. The Helikon's front piece (it's not really a "pole piece") is made of a non-conduc-

tive high-strength polymer. Scan-Tech claims the primary magnetic field is modulated by core and coil movements, and that variable eddy currents created in any nearby conductive materials will interfere with the primary field.

The magnetic field is created by two equal-diameter disc magnets mounted in front of and behind the coil gap. Scan-Tech claims its disc design "creates

scale) — or 0.5mV at 5cm/s, zero-peak, 45° (a commonly used alternative scale). This medium-compliance, medium-mass, medium-output cartridge was designed to work with medium-mass arms. Of course.

One interesting feature of Lyra cartridges that had never been adequately explained to me — but was, in a "white paper" I was sent — is their use of

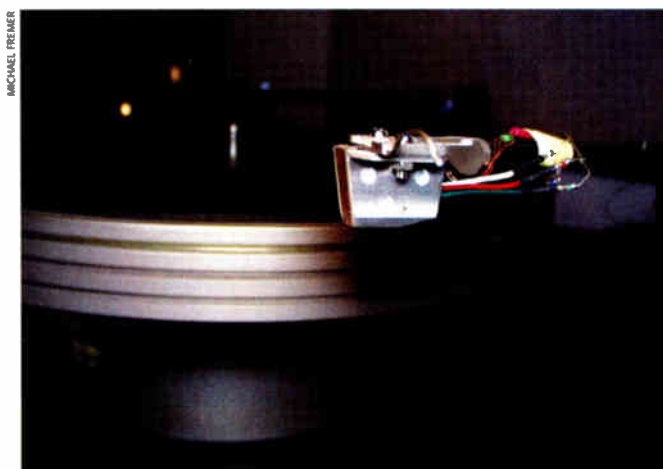
Japanese *washi* paper on the underside to protect the damper and coil assemblies from record schmutz and dust. According to Scan-Tech, most other cartridges use an enclosed body or a vinyl covering to protect the damper and coil, but *washi* paper "breathes." Scan-Tech feels the protective measures used in some other designs can create resonances that block the free flow of air necessary for proper coil movement.

None of this, of course, guarantees great sound, and taste in car-

tridges varies. But Scan-Tech's Lyra line has been very well received among audiophiles, and the Helikon sounded impressively transparent to me, as I described in the August "Analog Corner."

The \$10,000 Race

I'm still trying to get a Clearaudio Insider Reference to audition. In the meantime, I got another cartridge to check out: the Audio Note Kondo IO-J/silver. (The Kondo retails for \$15,000, but is sold direct via Sounds of Silence for \$10,000.) I would have called the IO/silver "The Lone Ranger" for obvious reasons. A few years ago you could buy a *condo* for 10 grand. This column once mocked the IO-J's promo literature, which still reminds us that "Sometimes we do feel like enjoying Good sound, Good Music by Analog disques." It also still features a line-drawing blowup diagram of the cartridge, listing this difficult-to-swallow manu-



Audio Note Kondo IO-J/silver MC phono cartridge

a more even distribution of magnetic flux across the entire gap" compared with ring-magnet and conventional offset magnet designs. This allows them to use small-diameter magnets (I'd previously written "large") and a short cantilever. The short cantilever puts the coil/magnet assembly very close to the record surface, meaning clearance on warped records is pretty minimal. Compared to some other cartridges, the Helikon is a low-rider.

The Medium is the Message

The Helikon's cantilever is of solid boron (not Cer alloy, as I'd reported), with two carefully wound layers of a slightly thinner high-purity copper wire than was used on the Clavis D.C. This dual-layer coil raises the internal impedance to 5.5 ohms from 3 ohms — still low enough to qualify as a low-impedance design — but raises the output to 0.35mV at 3.54cm/s, zero-peak, 45° (Scan-Tech's normal measurement

facturing location: "IO is derived from planet Jupiter."

Of course, what the copywriter, whom I suspect was Hiroyasu Kondo himself, meant to say was that the cartridge was named for one of Jupiter's moons. The silver model uses an aluminum cantilever and body, whereas the regular model has a titanium cantilever and a heavier, silver-plated brass body. Both IO-J cartridges use a elliptical diamond stylus and "pure silver wire after having let it lie idle on the shelf for 20 years," according to the literature. Mr. Kondo likes silver, which he likens to "a living thing, as if it has a gene, which seems to contain DNA as expressed a natural sound. Also silver has good looks to attract everybody." But you knew that.

The coils are wound with pure silver wire over a gold-plated iron yoke. The motor uses two extra-powerful alnico magnets and outputs 0.15mV.

This output is low, so you'll need a step-up transformer or a moving-coil head amp before the moving-magnet phono stage. Internal impedance is 1 ohm, load impedance is 1-3 ohms, claimed frequency response is 10Hz-30kHz, channel separation is 25dB at 1kHz, recommended tracking force is 1.8-2gm, and the compliance is 0.00000013cm/dyne.

Unfortunately, the IO comes hardwired with cartridge-shell leads, making it a good fit for SME arms, most of which are terminated with a set of pins at the headshell, but less than convenient when used with other arms. So importer-distributor Sounds of Silence brought along Kondo silver tonearm wire, fitted at one end with cartridge pins and thin silver Litz wire. After securing your usual tonearm wiring with tape, you wrap the Litz wire around your arm-tube and dress it away from the pivot. The Litz is hardwired to a length of much heavier silver interconnect terminated with standard RCA plugs.

To keep the heavy section of cable from dropping to the floor and ripping the thin Litz in half while dragging the arm across the platter in a stylus-destroying slide (nice scenario, huh?), I applied a hefty clamping mechanism to the rear of the Vibraplane to secure the Litz/RCA cable termination, thus preventing disaster.

While I experimented with the cartridge directly into the phono sections of the Ayre K-1x and Hovland HP-100 preamplifiers, I mostly used the Audio Note AN-S6CZ step-up transformer into the MM input of the Audio Research Reference phono preamp. (The AN-S6CZ retails for \$8000, but

don't understand this—a cartridge is already inherently a "balanced" device.

This is a review of a \$15,000 combo—or more than \$20,000 if you include the Audio Research MM preamp stage—that gets you only as far as your line section's front door. It's not in the realm of the real world for most of us, but it sounded *real* good.

When used with other, more familiar cartridges, the Audio Note AN-S6CZ step-up transformer produced amazing dynamic range, tube-like tonal richness (particularly in the midrange), and an overall purity and freedom from grain and edge that set it apart from any other I've heard. The transformer in the Hovland HP-100 (reviewed elsewhere in this issue), which adds \$695 to the price of that preamp, comes impressively close tonally, but can't match the Audio Note's dynamic swagger and fullness. I had an outboard version of the Hovland transformer on hand so I could compare it to the others using the

Audio Research's MM section as a reference. (For more on this, see my review of the Hovland.) There's one serious downside to the Audio Note transformer: it can induce unbelievable hum in your preamplifier if you don't position it precisely. But be prepared—the hum-free position might be quite awkward or inconvenient, as it was in my system. (I hear 100,000 readers jeering: "Yeah, right, like I'm *buying* a \$5000 step-up transformer...")

The IO-J/silver into the AN-S6CZ was big, dynamic, rich yet detailed, velvet-smooth, clean, and robust. It was easy to listen to, yet extremely exciting and enveloping. Nothing polite about the Kondo IO! It had tremendous mid-bass and deep-bass "slam," with superb control and focus. The top and bottom were ever so slightly tipped up, which gave the IO an "excitement" factor—but one so subtle that there was neither edge to the top nor boominess to the bottom. And the midrange was absolutely luscious.

Runmaging through my 10' open-reel tape collection, I found two tracks from Marti Jones' excellent *Used Guitars* album (A&M 5208-2) that mastering engineer Greg Calbi had dubbed for me from the analog master. I cued them up on a just-realigned Otari deck a friend



Audio Note AN-S6CZ step-up transformer

is also available direct via SOS for \$5000.) If you're going for the cartridge, you'll want the transformer. Even if you're not going for the cartridge, this pure-silver coil wire over a 78% nickel Permalloy core is one to seriously consider (if you have \$5000

Aside from being the best-sounding transformer I've heard, the Audio Note is the most flexible.

to spend on a transformer). I guess the Audio Note transformer's only competition is the Expressive Technology, which I haven't auditioned.

Aside from being the best-sounding transformer I've heard, the Audio Note is the most flexible. You can precisely match its input with the internal impedance of the cartridge you're using, and you can even load the output. There's also a switch bypass input with a low 1 ohm internal impedance for use with the IO; the switch lets you adjust for balanced or unbalanced input. But I

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Loricraft record-cleaning machine

had lent me and compared the tape to the LP and CD. The tape was best, particularly in the midrange; the LP's midrange via the Kondo was surprisingly close, but the tipped-up top and bottom were evident.

I then did an A/B comparison with the \$2400 Grado Statement cartridge in the Rega P3 turntable sitting on a 31D Seismic Sink, and guess what—the Grado's tonal balance was closer to the tape! But it lacked the Kondo's ability to mimic the tape's focus without artificial edge, its three-dimensionality and overall "ease"—not to mention the Kondo's dynamic balls. Yikes! Was the Grado blurring the picture? The table? Both? Was the tape deck coloring the results? I don't know right now, but I hope to again use the tape as a reference, once I get a handle on the Otari's sound.

The law of diminishing returns applies equally to expensive hi-fi and to *writing* about expensive hi-fi, especially when it comes to cartridges almost no one can afford. So I'm finished. If you've got the money, you should check out the absolutely thrilling-sounding, "sink into the music" Kondo kombo of the IO and the AN-S6CZ. Me? I was relieved to get it out of my system and return it unbroken. My sample belonged to an SoS customer who'd been generous enough to lend it to me for a few weeks.

Loricraft record-cleaning machine

Speaking of expensive...how 'bout a \$3200 vacuum record-cleaning machine? I've just spent some weeks with the Loricraft, and it's a different kind of cleaning experience. It's basic-

ly a Keith Monks machine (you *alte kockers* will know the name) that uses a vacuum and a thread to clean the record. There's a high-speed acrylic-and-foam platter and a high-torque motor to spin it really fast—close to 80rpm. Through a hole drilled in a tonearm-like device fitted with a Teflon (or Teflon-like) end piece runs a thread of unbleached nylon, which acts as a buffer to keep the arm tip off the record and allows the vacuum to suck without the arm sticking to the record.

The thread (stored on a spool attached to the arm) runs through a pipe attached to the arm, through the hole in the arm tip, through a plastic tube, and into the fluid-collection jar. If you're used to VPI/Nitty Gritty machines, this has got to sound bizarre...but hold on.

To clean a record, you put it on the platter and switch on the motor. You set the arm weight so that the cleaning tip barely contacts the record surface, so you don't worry about record damage. You then apply cleaning fluid to the record and brush it evenly across the surface with the supplied brush (or a brush of your choice). You then move the arm to the end of the record (as shown in the accompanying photo), switch on the vacuum pump and the arm mechanism, and the cleaning process begins.

The first thing I noticed was how quiet the Loricraft was. It barely made a sound. Slowly, the arm moved from inner to outer grooves, sucking fluid up the thread as it went. It took a minute or so to make its way across the record, but as it went, it efficiently vacuumed up all of the fluid. At the end of its travel, the

arm rose; as it did, a few millimeters of string were sucked through the line so that the next record would be treated with clean thread.

Think about it: No velvet lips to saturate, no lips for dirt and schmutz to adhere to and foul the next record you clean. Each record cleaned sees nothing but a fresh piece of string. It worked great and left a *very* clean, dry, sparkling surface. Cleaned records left no gunk on the stylus—the best indication of a truly clean record.

Negatives: Aside from the Loricraft's cost, which is substantial, its fast-spinning platter means that if you overload a record with fluid, the fluid goes flying off, and sometimes under and onto the record's other side. You have to pay much closer attention to the amount of fluid you put on the record than you do with the VPI/Nitty Gritty systems. I also found that, for reasons I haven't yet figured out, fluid was frequently left on an LP's lead-in groove area after cleaning. I got in the habit of drying the outer rims of records with a paper towel. The last thing you want to do is leave *any* moisture on a record being replaced in a rice-paper sleeve. Also, the platter is kind of cheesy: thin acrylic, and it wobbles.

The instructions are inadequate, but that's true of too many products. I'm sure the leftover liquid is a fairly common occurrence; there's probably a solution, but none is offered. Also, the counterbalance must be set for the "correct" weight on the arm, but you're not

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told what that weight is, nor are you told what to look for in finding it. For \$3200, I don't want to "experiment." I want to be taken by the hand and led through the process. (By the way: The motor had enough torque to allow me to use the Orbitrac cleaner.)

Overall, the Loricraft is an attractive, viable alternative to "velvet-lip" record cleaners. It's quiet and easy to use. It takes a bit longer to clean a side, but the results are excellent, and there's something "ultra-clean" about having a fresh piece of thread contacting the record instead of a pair of soggy, potentially contaminated velvet lips. I won't be trading in my VPI 17F for a Loricraft, but if I were buying my first machine and my budget permitted, I'd think twice about which to buy.

Two Stylus-Cleaning Fluids Compared!

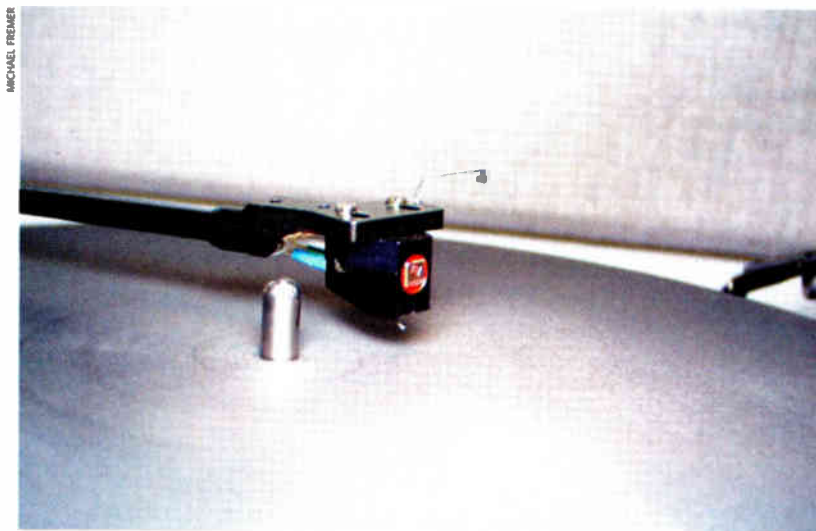
How to compare stylus-cleaning fluids: Normally, I look at the stylus with a magnifying glass, I clean, I look again. If the stylus is clean, the fluid has worked. For this I get paid the big, big bucks.

Stylus glue and solvents are something else again. I've never had a stylus fall out using any of the commonly available stylus cleaners (LAST, Needle Nectar, StyLast, LP #9, etc.), but various claims are made about dissolving bonding agents. Have you ever had a stylus disappear, leaving a cantilever with a hole in it (and a bankbook with the same)? If so, let me know what you were using to clean your stylus at the time.

Then there's the issue of residue contamination. Is any residue left on the stylus to fester there?

Scan-Tech has come out with Lyra SPT (for Stylus Performance Treatment). A 5ml bottle sells for \$40 and includes a small, wedge-shaped application brush. The instructions tell you to put a tiny drop of SPT on the protruding edge of the brush, then turn it around and very carefully slide just the surface of the brush along the stylus, in the usual back-to-front motion. You are advised to not brush *any* area of the cantilever with SPT, and to wait at least 10 seconds after application before playing a record. Scan-Tech claims that, in addition to cleaning your stylus, SPT will improve the sound of your cartridge, even if it's not a Lyra design.

Apparently, SPT is designed to lubricate the stylus, but the amount of lubrication doesn't last more than an LP side. Any SPT left on the stylus will dissolve in the fluid itself when you reapply, so there's never any buildup of old



Dynavector 20X L MC phono cartridge

SPT on your stylus. But it's extremely important to be careful when applying it—if you get fluid on the cantilever, it will probably migrate up the shaft and into the motor assembly, where it can gum up the works. (This is also a problem, and probably to a greater degree, with StyLast.)

I look at the stylus
with a magnifying glass,
I clean, I look again.
If the stylus is clean, the
fluid has worked.
For this I get paid
the big, big bucks.

SPT is supposed to improve S/N ratio and trackability. After you've used the brush for five applications, you're instructed to clean and rinse it in water and let dry. (Evidently, the fluid is water-soluble.) And because you *do* leave a residue on the brush, you'd better do as they say and clean it frequently.

I compared SPT to Disc Doctor's Stylus Cleaner (\$24.95 for 14ml, including postage and handling), which comes with a stiff brush similar to the one LAST supplies. The stiffy is for just the first cleaning of a stylus. After that, the Disc Doctor, aka H. Duane Goldman, suggests using an artist's brush (synthetic or natural), that's been given a crew cut, or cut down and

angled à la the Lyra-supplied brush.

Goldman, a chemist, claims that his Stylus Cleaner, a mixture of micron-filtered water and separately micron-filtered +99.5% 1-propanol alcohol, leaves no residue on the stylus or cantilever. He's not comfortable with those that do, whether accidentally as a result of impurities, or deliberately, like SPT.

Because SPT was formulated by a cartridge manufacturer, I wouldn't be concerned about using it—especially with Lyra cartridges. But be sure to follow the directions, and don't get sloppy.

In an A/B listening comparison of the fluids, I was surprised to hear—after listening to a passage with the SPT-cleaned stylus and repeating with Disc Doctor fluid—a slight bit more sparkle and extension using the latter. But it could have been the power of suggestion. Given the price difference, I don't see how you can go wrong with the Disc Doctor fluid—unless you want the slight lubrication, which might reduce friction and heat and thus prolong stylus and vinyl life. But that's just a maybe.

Dynavector 20X L phono cartridge

I prefer the reasonably priced (\$525) Dynavector 20X L cartridge to the original, far more expensive XX-1L. The premium Dynavector is beautifully built and well-engineered, but it just never came to life for me in any tone-arm I tried—too damn polite and laid-back. My recollection of the original budget Dynavector 10X was that it was *Bright!!!!* and *grainy*, even after a long break-in. I understand that the current-generation 10X4 (ca \$325) is much more smooth and refined.

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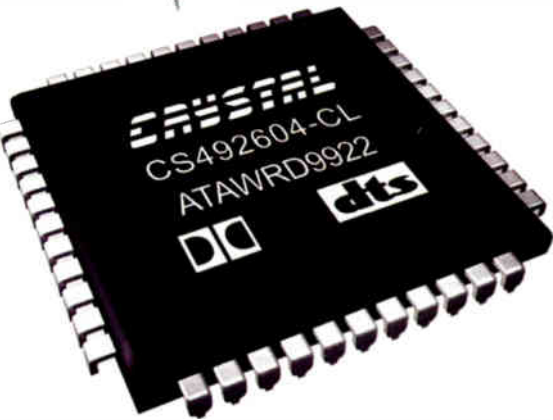
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The 20X L features a nude elliptical diamond on a 6mm hard aluminum pipe, weighs 8.6gm, has medium compliance (0.00000012cm/dyne) so it should mate well with most current popular arms, and outputs 0.25mV at 1kHz, 5cm/s. (A high-output version, not auditioned, does 10 times the output: 2.5mV.) The 20X L includes "Flux Damping" and "Softened Magnetism," which Dynavector claims eliminate distortions caused by excess magnetic flux created by the high-energy magnets used in modern moving-coil cartridges.

This well-made, well-engineered, medium-priced cartridge sounds really good. The 20X L had no serious sonic bunions, and it did a few things very well. Tonally it was very smooth overall; it had more bite up top than the XX-1L, but it didn't bite my head off like the original 10X. The overall presentation was a bit dry; the bass was nicely extended, but wasn't as lush or as tactile as a premium cartridge can deliver; and control on bottom was somewhat hollow as opposed to rock-solid. But it wasn't blubbery down there, and the extension was very good. In the upper octaves, the 20X fused details


that more accomplished and expensive cartridges deliver as separate events. Dynamics were very good, though it couldn't reach the full-glory dynamic extension of the ultra-premium variety. Not a problem—it'll probably be used in turntables that can't deliver the goods there either.

If your musical tastes are varied, the Dynavector 20X L should suit all kinds of music.

What impressed me most about the 20X L, given its price, was its overall balance, its musical excitement without brightness, and its lack of any strong negative sonic quality. The build quality seems high, especially the rigidity of the aluminum body, though it's not tapped and threaded. You'll have to fuss with tiny nuts.

I was pleased with the amount of detail the 20X L delivered when I

compared three different pressings of *Led Zeppelin*: a mint original American Atlantic (1841 Broadway label) mastered by George Piros, a second or third UK pressing, and Classic's new 180gm reissue, mastered by Bernie Grundman. The 20X L told me that the original had the greatest spaciousness, instrumental focus, and layering, the tightest bass, and the fullest palette or instrumental colors. Okay, it's Led Zep—but the acoustic guitars and the snare and cymbals were most convincing. Classic's reissue has great dynamics, but for some reason more of the music is stuffed into the center compared to the original and British pressings, and the overall sound is darker, with a bit less shimmer and more grain to cymbals and acoustic guitars. The focus is not quite as good either, nor is instrumental layering.

I heard all of this with the Kondo IO-J/silver, but the 20X L told me what was going on with equal authority—a nice surprise at \$525. Some budget-conscious classical-music lovers might prefer something with greater liquidity and lushness, but if your musical tastes are varied, the Dynavector 20X L should suit all kinds of music. 



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Undercurrents

George Reisch



Metallica's Lars Ulrich and Creed's Scott Stapp don't get it. But Courtney Love understands, and so does *Stereophile's* Jon Iverson, who pointed out in October's "As We See It" that the dispute between the RIAA and Napster is more important to audiophiles than it might seem. The Napster-MP3 phenomenon is a crack in the dike that controls music distribution. How the water seeps through that crack now will determine how it will flow when the drip turns into a trickle, the trickle into a stream, the stream into a river. Audiophiles and pop-music fans alike will be in the same boat.

If you've not been following it, the issues focus on the RIAA's lawsuit against the Napster website, which operates as a user-to-user directory of compressed music files (MP3s). These files can be played on computers or portable MP3 players. Napster doesn't itself provide MP3s, but it does tell you, via the Internet, how to find where they're stored on other users' PCs. From there, you can make a copy for yourself—an exact digital copy—to keep on your own computer or MP3 player. And it's all free.

As the RIAA and many musicians see it, this is theft. "Napster is robbing me blind," said Creed's Scott Stapp (quoted recently on www.salon.com), because fans are able to enjoy Creed's songs without paying for CDs or cassettes. Whether or not the courts ultimately agree that Napster is party to theft remains, as I write, an open question. But there is clearly something

wrong with Stapp's view. If he's being robbed, he's not missing anything. Nothing is taken from him or his record company if 1 or a thousand fans download copies of his songs. Though bands and record companies may see

it. As the Napster-RIAA suit continues to be played out, and in the longer-term evolution of the music business, our idea of what musical recordings are is going to change. Better: It's going to be *corrected*.

Let's get physical (and historical): Not long ago, music was essentially tied to physical events in which vocal cords and instruments buzzed and vibrated. If you wanted to hear it a second time, musicians would have to play it again. Strictly speaking, you'd be hearing different events, and the music would sound at least slightly different. It would never be exactly the same. Hear today, gone tomorrow.

Recording technology changed all that. Wax cylinders,

phonograph records, tapes, and CDs decouple the playing of music from the hearing of it. To hear a performance again, you need only press Play again. No one has to sing or play a second time.

Though recordings have been around for decades, we have not yet absorbed the implications of this decoupling. Instead, we continue to think of recordings as though they were essentially material or physical—like live music itself. Appropriately, we have treated LPs and tapes as if they were precious, physical objects: Don't overplay your LPs, for you'll wear them out and damage the music! Keep them upright and out of the sun—and, for the spines' sake, away from cats! If you try to separate the music from its original medium and record it onto another (such as analog tape),

We continue to think of recordings as though they were essentially material or physical—like live music itself.

The faults in Stapp's logic mirror the cracks in the dike. There's something artificial and forced in the way we think about recorded music—just as a dike artificially contains water in a place that wouldn't naturally contain



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there is always an audible loss, as if some of the music remains behind, locked away. Even today, I talk about recordings as if they were essentially a material commodity: I go to the record store “to buy some music.”

I even used to believe that an LP or tape was, in some vague way, a substantial connection to the artists I adored. As a pre-teen fan of Elton John and the Moody Blues (sophisticates: give me a break; I was young), I imagined that Elton John or Justin Hayward made occasional trips to their record plants to see how things were going. Their pictures were on the covers, so it was easy to think that they were involved. From time to time, I imagined, they’d sit in and operate a record-stamping machine. Maybe they’d remember a fan or friend and grab a few LPs from a conveyor belt.

But it was all a fantasy resting on this idea of recordings as physical goods that move from artists to consumers. Instead, the paper, vinyl, and ink that make up my treasured, immaculate pressing of the Moody Blues’ *On the Threshold of a Dream* (Deram DES 18025) could have been manufactured as another record by another artist. As a physical object, the recording had no connection at all to the Moody Blues or their music. My understanding was only on the threshold of being correct (as my musical choices were on the threshold of taste).

The truth is that recordings are immaterial—they are sets of information merely encoded in vinyl, tape, or optical discs. That wasn’t easy to see before we had the language (“MP3s” or “WAVs,” for example) and the tools (personal computers) to manage files of musical information apart from the media that ordinarily contain them.

This is the metaphysical side of the Napster phenomenon: music-lovers with high-speed Internet connections, MP3 players, and lots of hard-disk space are now treating recorded music as the immaterial, nonphysical thing it is. That’s why the RIAA sued Napster: Treated as physical objects, in jewelcases and cassette boxes, recordings can be distributed in a controlled, profitable matter. As immaterial files of information, they can’t be. They can and will move from person to person as easily as jokes or fashion trends.

Long-term, the job for the courts is to forge a workable understanding of recordings that treats them as intellectual, not physical, properties. That’s no small task, given the intricacies of copy-

right law and the ambiguous nature of such concepts as “software” and “hardware.” On top of that, there’s the human tendency to resist conceptual change—even on the part of popular artists who typically present themselves as open-minded and progressive.

Metallica drummer Lars Ulrich told Congress that his band has always embraced new recording technologies as they came along. And in the future, as music becomes more digital and more downloadable, he explained to

“In a world where
we can get anything
we want whenever we
want it, how does a
company create
value? By filtering.”
— Courtney Love

the Washington suits, Metallica will be right there to support the new technologies. “However,” he said, these developments must not “destroy the artistic diversity and the international success that has made our intellectual-property industries the greatest in the world. Allowing our copyright protections to deteriorate is, in my view, bad policy, both economically and artistically.” Translation: If the future of digital distribution means allowing recordings to be widely available for free, please quash it. Mr. Ulrich wants to change with the changing times, and he doesn’t.

Others are marching in step to Ulrich’s beat. Jonatha Brooke (also quoted in www.salon.com) complains that file-sharing is “stealing” from artists, and rejects talk of revolutionary changes in the music business. The idea is that artists will generate income not by selling recordings but by selling concert tickets or T-shirts. MP3s will then function mainly as a kind of advertising for other, revenue-generating parts of the business model. But Brooke seems unable to grasp the very idea that the business could change: “It’s laughable,” she says. The people articulating these new business models “have no idea how the music business works.” Um... right.

In all of this, the clearest (if only metaphorically) voice is Courtney

Love’s. She’s one of the few who sees the larger forest for all the MP3 trees. Why all this talk of robbing and stealing now, she asks, when “recording artists have essentially been giving their music away for free [to the record companies] under the old system”? (See the *New York Times*, June 11, 2000; and www.salon.com, June 14, 2000, “Courtney Love Does the Math.”) Despite her anger toward the record companies and their exploitation of artists, Love generously outlines how they might function in an MP3-filled future. Though there will always be need for topnotch producers, engineers, and studios, it is rapidly becoming easier and less expensive for bands and artists to produce their own recordings. (I recently finished a 16-track project using just my PC and a mixer; it sounds better than anything I could have done 15 years ago in a fully equipped recording studio.) Record companies, therefore, can act less as cultivators of talent and more as filters of talent.

“In a world where we can get anything we want whenever we want it,” Love asks, “how does a company create value? By filtering.” Music-lovers who collect MP3s can use services to help them learn about new bands and new recordings, to learn where downloads can be found (and even purchased, if the price is right). And the services can provide critical, editorial voices debating what’s good and what’s not. You can charge for these services, too, because they can’t be replicated and shared. My search for music will not be the same as the next guy’s.

Love’s proposal is faithful to the realities that the Napster-MP3 phenomenon has let out of the bag. When perfect copies of music files are only a mouse-click away, it will be futile to prop up the old business models. If the RIAA and other foes of file-sharing succeed in legally quashing Napster, other file-sharing services that are legally less vulnerable will most likely thrive in its place. The dike can’t be repaired and patched forever.

Although this issue is driven by new technologies, it could return us to our older, original conception of music as a singular physical event. That which cannot be reproduced and copied with a mouse-click—namely, a live performance—could become more and more valuable to fans and music-lovers. Artists could become more like their counterparts in earlier centuries, when musicians were primarily performers, not recording artists. ■



SUPER AUDIO CD — ONE YEAR LATER

Stereophile Editor John Atkinson muses on issues raised by Super Audio CD and DVD-Audio, and David Rich compares the technologies behind the new hi-rez audio media.

Editor's Introduction

In his very English way, Sony's then managing director for the UK, Tim Steele, was getting a touch, er, desperate. His oh-so-cultured voice rose a smidgen as he resorted to a direct selling of the benefits of what he was talking about. "Look, you're all sitting on riches," was his fundamental pitch. "You can sell music-lovers your entire back catalog all over again — at a higher price!"

The scene was a London seminar scant months before the Japanese launch of Compact Disc in fall 1982, and less than a year before the official US launch at the 1983 Chicago Consumer Electronics Show. Sony was trying hard to get major executives representing all the major labels to understand what CD had to offer them.

It will be hard for you who didn't live through the CD launch to believe, but the record industry was very resistant to the introduction of the medium that has since made them so much money. You would have thought that, coupled with the opportunity to redefine the retail price of recorded music to almost double its existing level, Tim was making an irresistible argument. But the general reaction from the gathered music-biz folks at that 1982 seminar was that with prerecorded cassettes outselling the LP, why confuse the market? Even two years after the launch, I was having dinner with a friend who was at that time in charge of US back-catalog sales for a major label, and his skepticism about CD ran deep.

Now, of course, these same people — or their successors — not only take for granted the profits generated by the Compact Disc, but take credit for having invented the CD as well.

As I've pointed out before in these pages, dominant recorded-music media tend to appear once a generation — every 20 years. CBS first demonstrated the microgroove LP in 1948; Philips launched the Compact Cassette in 1963; and Philips, with Sony, introduced consumers to digital audio technology with 1983's Compact Disc. There were other media launches along the way — prerecorded open-reel tape, the 8-track cartridge, Elcaset, DAT, MiniDisc, DCC — but none of these had what it took to make it in other than specialized niches, if at all. And now, of course, there are two new contenders for the crown: Super Audio CD and DVD-Audio.

It was exactly one year ago, in the November 1999 *Stereophile*, that Jonathan Scull reviewed the first dedicated Super Audio CD player to reach these shores: Sony's \$5000 SCD-1. This issue features Jonathan's report on the only DVD-Audio player you could buy in the US at the time of shipping this issue of the magazine to the printer: Technics' \$1200 DVD-A10.

As you can read in Jonathan's review of the Technics, the DVD-Audio launch has been nothing less than a fiasco, with just one disc officially available at the time of last summer's delayed launch. (To Technics' credit, at least they made their debut with a universal player, so its owners can play DVD-Videos and CDs.) With hindsight, the fiasco might have been foreseen, given the involvement of so many parties — not only hardware manufacturers but also the record industry, paranoid over the need to stamp the new high-resolution media with "watermarks."

Ah, the record industry. Of course, it's always easy to knock the people who control the flow of the music we crave. But their shortsightedness regarding what they've been offered by new media is nothing new — witness the efforts Tim Steele was having to make back in 1982. And when you look at the current size of the US recorded-music industry — an estimated \$15.5 billion in 2000, according to a recent study by PriceWaterhouseCoopers and Wilkofsky Gruen Associates — it's hard to feel any sympathy for their claims that their current economic position has been significantly affected by CD copying by individuals, or by piracy in countries (such as China) that historically have adopted a *laissez-faire* attitude to copyright protection.

There were two areas where the CD didn't satisfy the record industry. First was that, for every disc sold, a royalty had to be paid to Sony and Philips, as the owners of almost all the patents embodied in the CD format. While this is trivial in the larger scheme of things, I'm sure it stuck in the throat of many an executive. Now, with many CD patents about to expire and the rest rendered more or less moot by the different physical nature of the DVD carrier, I'm sure this is why many more record companies have signed on with DVD-A than with SACD, at least in theory.

Second and much more fundamental was the fact that, with the unencrypted nature of its digital datastream, CD broke with all prior media in offering consumers access to the master. With the limitations of analog playback technology — or, to be more politically correct, the *changes* wrought in the music by the acts of mastering and duplicating in the analog domain — the LP a consumer could buy was, by definition, *different* from what the record company had in its tape vaults. And while you could copy an LP onto tape of some kind, the result was even *more* different. Provided the pricing of the commercial music media was appropriate, therefore, there would always be an inherent marketing advantage with the real thing: it was closer to the original.

CD changed all that. To all extents and purposes, the consumer medium *is* the master. While the retail pricing of CD can still be kept low enough to minimize cloning —



yes, you *can* photocopy a book belonging to a friend, but it's cheaper and less time-consuming to buy your own copy — the fact that a CD-R or DAT copy of a commercial CD is bit-for-bit identical both to it and to the master is a scary concept to music-biz lawyers.

With Super Audio CD and DVD-Audio, the record industry had an opportunity to correct this, which they saw as CD's fundamental flaw. This can be achieved in three ways: 1) by eliminating access to the unencrypted music data retrieved from the disc (SACD); 2) if access is required, by degrading its resolution (DVD-A); and 3) by marking the physical carrier (SACD) or the music itself (DVD-A, SACD?) with identifying marks.

I feel that, with the exception of the physical marking of the SACD disc, such hobbling of the new media is at best irrelevant, and at worst equivalent, as Jon Iverson delightfully put it in last month's "As We See It," to marking your ownership of a clear pool of water by peeing in it.

But by setting the watermarking of the music data as a serious enough goal to damage the launch of DVD-Audio, the record industry is fighting yesterday's war. Both SACD and DVD-A are logical extensions of the current music retailing system, in which the music and its carrier are one and the same. Yet, as Nicholas Negroponte of MIT's Medialab pointed out in his 1995 book, *Being Digital* (Alfred A. Knopf), the bits representing the information don't have to be tied to the

atoms representing the physical carrier of that information. And as George Reisch argues in this issue's "Undercurrents," the Internet revolutionizes the distribution of "bits" by eliminating the need for "atoms." This is the real threat facing the record industry, because it is in the *distribution* of the music carrier that they have hitherto had a monopoly.

Crippling DVD-Audio with potentially audible watermarking does nothing to prevent the shift of music distribution to the Internet. That the record industry recognizes this is obvious in the rapid setup of download and streamed-music websites by the "Big Five" companies, and their laying of the groundwork for a subscription or pay-per-download business model. (This fundamental change in music distribution, which carries with it an abandoning of the very concept of high fidelity, has major implications for the high-end audio business. We have been covering these in depth on www.stereophile.com.)

By contrast with the disarray of the DVD-Audio launch, Sony's and Philips' rollout of Super Audio CD was on time, carefully focused, and took note of the existing realities of music distribution. As in 1982, Sony and Philips have worked with the record industry to fit what the new technology has to offer within the current framework of how music is sold. It is an old maxim that the more new technology is introduced at the same time, the more chance there will be that something will go wrong. So while a

major purported benefit of Super Audio CD is its multi-channel capability, the first three players on the market and all the 160 software titles available as of fall 2000 are conventional two-channel recordings. (The first multichannel SACD player, from Philips, will not be launched until the end of this year.) By contrast, by going for broke at the outset with a multichannel player and multichannel recordings, the DVD-Audio launch added mastering complexity and consumer confusion to a mix already sullied by the watermarking issue.

The technical story behind a product may be interesting, but the proof of the technology is in the hearing. Sony must be congratulated for the simply superb standard of its demonstrations of SACD at Consumer Electronics Shows, at AES Conventions, and at the HI-FI Shows cosponsored by *Stereophile*. Reviewers for this and other magazines were subsequently impressed by the sound the first players could achieve in their own reference systems. Plug'n'play excellence.

However, when you read the DVD-A10 review in this issue, you might sense that Jonathan Scull had some conceptual difficulties writing the review. Using the known technology of Linear PCM digital encoding, and offering up to 24-bit word lengths and sample rates of up to 192kHz, DVD-Audio has the potential for sounding truly superb. Yet only occasionally during the review auditioning did he and I hear flashes of that potential quality. As I described it to Jonathan in one of our many discussions during the preparation of the review, the problem is that Technics designed their first DVD-A player to be the best-sounding at what is really a mass-market price point. By contrast, Sony with its SCD-1 and SCD-777ES,¹ and Marantz with its SA-1 (reviewed by Jonathan in September), went for broke, leaving no audiophile-approved stone unturned in their designers' efforts to squeeze the best possible sound quality from SACD. Only now, as you can read in this issue's "Industry Update," with SACD technology proved, is Sony bringing to market less-expensive players.

So, with SACD a year old, DVD-Audio launched in a decidedly halfhearted manner, and both, in my view, in danger of remaining stillborn. I asked David Rich, technical editor of the sporadically published magazine *The Audio Critic*, to investigate the technology behind these new media. We also include the reaction of a typical audiophile to SACD. Because what really matters is the sound, right?

—John Atkinson

The Rich Report

Although Philips invented the Compact Disc, it was only when Sony got involved in the early 1980s that it was decided—at the prompting of conductor Herbert von Karajan, a close friend of Sony's then-president Akio Morita—that the CD should have a long enough playing time to fit Beethoven's Ninth Symphony on a single disc.² Even if the conductor was using very slow tempos, and even given the minimum pit size and track pitch printable at the time, the 16-bit data and 44.1kHz sampling rate they settled on gave them a little margin.

From the beginning, it was pointed out that Linear Pulse-Code Modulation (LPCM) encoding at 16-bit/44.1kHz may not have been good enough to be audibly transparent. Research indicated that a signal/noise ratio of greater than 98dB would be needed before the ear would discern any artifacts in its most sensitive range. In addition, the choice of a 44.1kHz sample rate left a transition or guard band of just 2kHz between the audio passband and the stopband for the

anti-alias (record) and reconstruction (playback) filters.

This narrowness of the guard band has always been controversial. With a 44.1kHz sampling frequency, signals higher in frequency than 22.05kHz will alias—*ie*, produce enharmonic image products in the audioband—and thus need to be filtered out. This requires very steep low-pass filters that can, some papers claim, cause audible problems. The 48kHz sampling rate of DAT recorders and DVD-Audio players doubles the guard band, but it is not widely reported how this small increase in sampling rate could make such a big difference in perceived sound quality. In recent AES preprints, the most optimistic assumptions about human hearing put the maximum sample-rate requirement at about 60kHz.³

Now the questions about digital technology as embodied in the CD format are about to disappear. The 4.7-gigabyte capacity of the DVD-Audio disc, achieved by a smaller pit size, closer track pitch, and a laser of slightly shorter wavelength, can give us 5.1 channels with a 24-bit depth, and 24 bits give a maximum S/N ratio of 144dB. Distortion is at that level too. Such low levels of noise and distortion are well beyond the limits of human hearing—and even beyond the limits of electronics, for such fundamental reasons as thermal noise in circuits and transducers.

On the sampling-rate front, 96kHz gives us a guard band of 28kHz between the nominal 20kHz top of the audioband and the Nyquist Frequency of 48kHz. This can be used to make the anti-alias filter less sharp—*ie*, with a less steep initial rolloff—which will reduce pre- and post-ringing on impulses. Alternatively, by staying with a 2kHz guard band, we can record up to 46kHz at 144dB signal/noise, if you think you can hear that high.⁴ (Papers have shown that some young people can hear past 20kHz.)

Any way you slice it, its 24-bit data size and the 96kHz sampling rate possible for 5.1-channel recordings puts DVD-A well beyond the limits of audible problems. However, the DVD-A launch was delayed until copy-protection issues had been worked out. [*And even with players available as of summer 2000, the copy-protection issues had not been fully resolved.* — Ed.] The good news is that, because it is based on the Digital Versatile Disc technology, which benefits from significant economies of scale, the first-generation DVD-A players will be relatively inexpensive.

Meanwhile, there is another competitive standard to consider: the Sony/Philips Super Audio CD. Rather than use LPCM, SACD uses a proprietary fixed delta-sigma modulation code, known as DSD. As delta-sigma modulation technology is well-known to audiophiles, I will only briefly summarize it here.

1 Though *Stereophile* hasn't reviewed the SCD-777ES, Chip Stern is enthusiastically using a sample to prepare his SACD reviews for the magazine's regular "Quarter Notes" feature. —JA

2 I was present at the 1981 Salzburg, Austria press conference where Morita-san first presented this explanation of why Sony had asked for an increase in the planned disc size. (This was also the occasion where HvK made his infamous "All else is gaslight" quote about the CD.) Perhaps more important, Sony had persuaded their Dutch partners that the planned 14-bit word length was insufficient to achieve the desired sound quality. For me, the unsung hero of the CD concept was Toshi Doi, who came up with the error-correction code and was a forceful advocate for 16-bit word lengths. Dr. Doi is currently a leading light in Sony's robotics research efforts. —JA

3 See, for instance, Robert Stuart, "Coding Methods for High-Resolution Recording Systems," presented at the 103rd AES Convention, New York, 1997. Available from www.aes.org as preprint #4639, in expanded form from www.meridian-audio.com/w_paper/Coding2.PDF. —JA

4 For a discussion of this subject, see my "What's Going On Up There?" in the October *Stereophile*, pp.63–71. —JA

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In the simplest form of delta-sigma modulation, a 1-bit converter is oversampled in a feedback loop. By definition, a 1-bit system—it's either on or off—suffers from very high quantization noise. However, the feedback loop shapes the noise energy so that noise is acceptably low in the audible band but high outside it.

Audiophiles have been suspicious of negative feedback for years, but for reasons I don't understand, they appear to have given delta-sigma modulation their implicit approval. Unlike feedback loops in amplifiers, where the loop circuit is already somewhat linear, the feedback loop in a delta-sigma converter is wrapped around the most *nonlinear* component we can imagine: a 1-bit A/D converter.

Why would anybody do this? As two points define a straight line, by definition a 1-bit converter has zero linearity error. With noise-shaping we can have a converter with as many bits' worth of effective resolution as we like, as long as our oversampling rate is high enough and the noise-shaper is of a high enough order. The delta-sigma modulator is an effective way to make high-resolution converters cheap by replacing complex, multibit ADCs and DACs with simple, cheap, single-bit units. In the real world, of course, that simple converter is very complex to design: noise and distortion must be considered in the ADC's noise-shaper and sampler, and in the charge-to-voltage converter and reconstruction filter of the DAC.

We get no free lunch with a delta-sigma modulator. Using a high degree of negative feedback around a strong nonlinearity can give rise to idle-channel tones and limit cycles. (In effect, the converter behaves as an oscillator—it puts out a repeating pattern even when there is no input.) Numerous papers have been published in both the AES and IEEE journals describing this phenomenon. In particular, the difficulty in analyzing, modeling, and eliminating these non-ideal effects has been described. These quasi-periodic oscillations have been shown to be audible, at least with test signals, by me and Steven Norworthy in the AES preprint mentioned in the "References" sidebar. They are easy to hear even using Matlab computer simulations (output files can be played through the computer's soundcard), but their quasi-periodic nature makes them hard to measure, even in computer simulations in the frequency domain. In that paper, and in previous work by Steve, it was shown that the tones can be reduced by increasing the oversampling rate and by using a coder of more than 1-bit quantization. In fact, all high-performance ADCs using delta-sigma modulation now use a quantizer with at least three codes (Crystal), four codes (AKM), or five codes (dCS). Oversampling rates are universally 128x (relative to 44.1kHz) or more.

It should also be noted that 1-bit delta-sigma bitstreams are very sensitive to such analog issues as clock jitter, edge speeds, and folding of the very-high-energy out-of-band noise into the baseband. This gives rise to more tones and oscillations. The multi-level approach used in all high-performance delta-sigma DACs these days does reduce this problem, however.

In DAC design the trend has been to go to word lengths of 20 or more bits and up to 18-bit linearity (Analog Devices, Crystal, and even single Bitstream inventor Philips Semiconductor). An advanced technique that randomizes a multibit DAC's linearity errors by shuffling the DAC elements around for each code conversion has been universally

employed for high-end converters. Oversampling rates of 128x are now universally used for the highest-performance DACs, as they were in the ADCs. Burr-Brown continues to use multibit DACs for its highest-performance products, but these products use no feedback, instead relying on analog matching techniques to achieve the desired linearity.

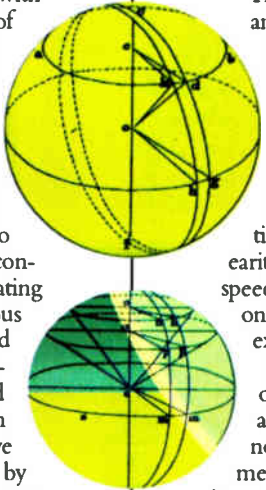
In terms of information theory, a delta-sigma stream can be shown to carry less information than a linear PCM stream of the same bandwidth/noise-floor product.⁵ It makes sense, therefore, to convert the bitstream output by a delta-sigma ADC to an LPCM stream before it is sent to a storage medium. In digital signal-processing, the circuit block that converts a high-speed low-bit datastream—output, for example, by an ADC—to a low-speed, higher-bit stream, is called a *decimator*. The decimator *reduces* the total number of data bits per second (bit depth times the sampling rate) coming from the ADC. Thus the decimator changes the inefficient delta-sigma stream from the ADC to the efficient PCM stream. (In the case of 24/96 DVD-A, this is 2.3 megabits per second per channel.⁶)

The equivalent DSP block in a DAC design is called an *interpolator*; it converts the incoming low-speed multibit stream to a higher data rate to drive a delta-sigma DAC. In effect, the efficient PCM stream is turned into the inefficient delta-sigma stream, which runs at a higher rate of total bits per second. Remember, the reason we create a delta-sigma stream is because it is cheap and easy to make DACs and ADCs that have low resolution but that run very fast with inherently good linearity. It is difficult and expensive to make lower-speed, higher-resolution converters that work directly on the PCM stream. This is the *only* reason for the existence of the inefficient delta-sigma stream.

With 0.12μm CMOS integrated-circuit technology, well-designed interpolators and decimators are so small they cost almost nothing. However, note that I said "well-designed." All the digital arithmetic must be properly done, including data-rounding and addition of dither. Internal data paths and filter coefficients must be as wide as necessary to ensure that no nonlinearities are introduced.

Please note that it is possible to build a decimator or interpolator that can distort the signal. Properly designed decimators and interpolators are audibly transparent, but improperly designed ones *can* introduce audible errors. I have little doubt that low-end digital filters/interpolators in some CD players are cheapened enough to cause audible problems. But bad design must not be confused with a fundamental problem in the concepts of decimation and interpolation.

With Super Audio CD, Sony and Philips offer a product that encodes the inefficient high-sample-rate, low-resolution bitstream. The Direct Stream Digital (DSD) encoding used on SACD is nothing more than the raw bitstream output by a seventh-order delta-sigma A/D converter. DSD



5 See Malcolm Omar Hawksford, "Bitstream versus PCM debate for high-density compact disc," viewable at www.meridian-audio.com/ara/bitstream.htm. —JA

6 For five channels of 24/96 data, this results in a total data of 11.5Mb/s, which is higher than the maximum possible rate that can be retrieved from a DVD. The DVD-A specification allows this rate to be reduced either by encoding the rear channels at a lower sample rate, or by using Meridian Lossless Packing (MLP). MLP takes advantage of the correlation between samples with music data to reduce the amount of data encoded on the disc. Unlike lossy compression schemes, such as Dolby Digital, or DTS at the lower rates, the PCM data packed with MLP can be retrieved with *no* loss of information. —JA



References: Delta-Sigma Converters

S. Norsworthy, R. Schreier, G. Temes, eds., *Delta-Sigma Data Converters: Theory, Design, and Simulation*, IEEE Press, 1997.

After 15 years of very active development that was covered only in journal articles and the occasional book chapter, here are the seminal texts from all the leaders in the field. Each chapter of *Delta-Sigma Data Converters* includes extensive references that I do not restate here.

Chapter 1 introduces the topic, including pattern noise, dead zones, limit cycles, and dynamic-range limitations. High-order structures are introduced. The problems with a two-level system are discussed; also explained is why higher-order systems like to have more than two level quantizers.

Chapter 2 is a very mathematical look at noise in delta modulators, with a detailed discussion of the failure of the analysis with respect to a 1-bit second-order (and higher) loop filter. Dither is examined in this chapter, and is the sole subject of Chapter 3.

Chapter 4 discusses the complex issues of stability of high-order delta-sigma modulators. Placement of transmission zeros is detailed, along with theoretical S/N ratio plots for a given oversampling ratio and order.

Chapter 5 discusses the design of higher-order single-bit systems. Practical methods of preventing idle-channel tones are discussed, as are the practical problems of making the system stable.

Chapter 6 looks at Cascaded (MASH) structures that produce multi-level outputs, and Chapter 8 discusses the design of multibit internal converters, including such methods of improving multibit DAC linearity as dynamic-element matching and randomization.

Chapter 10 discusses architecture tradeoffs for DACs. Issues of analog circuit design for ADCs are dealt with in Chapter 11, and Chapter 12 does the same for DACs, including the effects of clock jitter. Chapter 13 is about decimation and interpolation in delta-sigma conversion.

Stability and tones in DSMs has been a big topic of research. The references below postdate the text of *Delta-Sigma Data Converters* and are drawn from practical papers on audio delta-sigma converters. Papers on multibit digital/analog conversion that include discussion of why to choose multibit over single-bit are listed below:

Y. Matsuya, K. Uchimura, A. Iwata, T. Kaneko, "A 17-bit Oversampling D-to-A Oversampling Technology Using Multistage Noise Shaping," *IEEE Journal of Solid-State Circuits*, Vol.24 No.4 (August 1989), p.969. This is the original MASH paper from NTT that gave rise to all the Japanese DACs developed by Panasonic and Sony. It uses a PWM DAC to output the multibit signal from the MASH coder (MASH always produces multibits). This important paper is not often cited. (People tend to cite the MASH ADC paper by the same group instead.)

H. Schouwenaars, et al, "An Oversampled Multibit CMOS D/A Converter for Digital Audio with 115dB Dynamic Range," *IEEE Journal of Solid-State Circuits*, Vol.26 No.12 (December 1991), pp.1775–80. Philips invented the delta-sigma modulator in the 1960s, and were the first to apply it to CD players in its 1-bit form (switched-capacitor based). Crystal Semiconductor soon joined the fun. This paper shows that Philips was still in the lead in 1991, as they moved from single- to multibit. The group has not

done any recent work, and Philips no longer has high-performance parts in the catalog. Don't ask me why they stopped competing.

T. Hamasaki, "A 3V, 22mW Multibit Current-Mode Sigma-Delta DAC with 100dB Dynamic Range," *IEEE Journal of Solid-State Circuits*, Vol.31 No.12 (December 1996), p.1888. This is the Burr-Brown work.

R. Adams, K. Nguyen, K. Sweetland, "A 113dB SNR Oversampling DAC with Segmented Noise-Shaped Scrambling," *IEEE Journal of Solid-State Circuits*, Vol.33 No.12 (December 1998), p.1871. This is the Analog Devices work, and a very clear paper that took the "Best Paper" prize when presented at IEEE ISSCC — about as prestigious a prize as you can get in the world of electronic engineering.

T. Shui, R. Schreier, F. Hudson, "Mismatch Shaping for a Current-Mode Multibit Delta-Sigma DAC," *IEEE Journal of Solid-State Circuits*, Vol.34 No.3 (March 1999), p.331. An important university paper with good references.

I. Fujimori, A. Nogi, T. Sugimoto, "A Multibit Delta-Sigma DAC with 120dB Dynamic Range," *ISSCC Digest of Technical Papers*, February 1999, pp.152–53. The AKM response to Analog Devices.

X. Gong, et al, "A 120dB Multibit SC Audio DAC with Second-Order Noise Shaping," *ISSCC Digest of Technical Papers*, February 2000, pp.344–45. The Crystal Semiconductor response to AKM and Analog Devices.

References: Multibit ADCs

Less activity is occurring in state-of-the-art audio ADCs because the market is much smaller for these. Analog Devices and Philips are sitting things out, while Burr-Brown appears to be concentrating on lower-cost chips for use in CD-R, MiniDisc, and A/V receivers. Most companies are busy working on converters for DSL rather than audio. DSL has some very tough requirements, and many of these are multibit delta-sigma structures. We will not reference these here.

I. Fujimori, et al, "A 5V Single-Chip Delta-Sigma Audio A/D Converter with 111dB Dynamic Range," *IEEE Journal of Solid-State Circuits*, Vol.32 No.3 (March 1997), p.329. This paper is the flip side of a MASH DAC chip. The AKM ADC paper above is a new MASH architecture. This MASH architecture gives rise to two bits each DSM clock cycle. AKM does some interesting stuff to eliminate idle tones and to maximize dynamic range.

Y. Ka, et al, "5V, 118dB Delta-Sigma Analog-to-Digital Converter for Wideband Digital Audio," *ISSCC Digest of Technical Papers*, February 1997, pp.218–19. This paper describes an important three-level design by Crystal Semiconductor.

References: Miscellaneous

Finally, two papers I refer to directly in the text:

S. Norsworthy, D. Rich, "Idle-Channel Tones and Dithering in Delta-Sigma Modulators," presented at the 95th Convention of the Audio Engineering Society, Preprint 3711.

S. Norsworthy, "Effective Dithering of Sigma-Delta Modulators," *ISCAS '92, IEEE Proceedings*, Vol.3, May 1997, pp.1304–07.

—David Rich

S₁ uses only a single bit to encode the signal, whereas the high-performance ADCs from all leading manufacturers—and all work in advanced research—use three codes, and in many cases more than that. Significantly, the Sony/Philips DSD system oversamples only at a 64x rate (relative to 44.1kHz). That's half the rate used in *all* high-performance ADCs and DACs available today. To get better than 20-bit performance below 20kHz with a 1-bit stream, a seventh-order modulator must be used at this low oversampling rate. The higher the modulator order and the lower the number of levels, the more difficult it is to remove the high-frequency energy of the 1-bit quantizer. The problems made worse include sensitivity to clock jitter and matching of clock edge rise and fall times. Aliasing of out-of-band noise into the passband becomes more difficult to deal with in a high-order, single-bit system.

The one-bit encoding and 64x oversampling rate results in a data rate of 2.8224MHz per channel for DSD, which looks similar to 24/96 LPCM's rate of 2.3Mb/s. Remember, however, that DSD uses an inefficient delta-sigma bitstream. If we look at the theoretical spectrum of a full-scale, DSD-encoded 1kHz tone (fig.1, after Sony), we see that the 24-bit performance is not achieved in-band, and that the S/N ratio drops quickly above 20kHz as the quantization energy from the 1-bit coder becomes significant. The 24/96 LPCM used on DVD-A offers 24-bit noise and distortion performance all the way up to 46kHz.

Because DSD uses a high-order delta-sigma modulator, the noise above 20kHz rises very quickly. (The higher the order, the faster the rise.) To prevent high levels of high-frequency energy from getting out of the player, an analog low-pass filter at 100kHz is required during SACD mastering. Even so, a large amount of out-of-band noise might be passed on to the power amplifier, perhaps as high as a tenth of the full power output of the system. If not rolled off by the amplifier, this may be just below the energy level to harm a tweeter. This is why SACD players are required to use a further 50kHz low-pass filter on their outputs (though this can be defeated). The need for these low-pass filters works against claims that DSD has wide bandwidth and low phase shift.

Making the inherent data inefficiency of a delta-sigma datastream worse is the fact that lossless coding is less effective than the MLP used in the PCM-based DVD-A. Because of all the high-frequency energy in the stream (energy that would be rejected by the decimators used in a PCM-based system), the DSD data are less correlated and less susceptible to efficient packing.

Why would Sony and Philips introduce a medium that, while offering higher resolution than CD, uses an inefficient coding scheme, needs great care to avoid stability problems with that coding, and requires analog low-pass filtering to ensure there are no compatibility problems with the playback system? Because, they claim, the DACs to decode the stream can be made cheaply, and it might be possible to pass the datastream all the way to the power amplifier.

Nice marketing talk, but this can never be allowed to happen: If the 1-bit stream came out of the box, it could be perfectly copied. It is important to understand that the data

stored on a SACD are encrypted, and that the encryption must be reversed before the 1-bit stream can be sent to the D/A converter. Sony's first SACD players, the SCD-1 and SCD-777ES, have separate chips for their digital operations and their DAC stages, and their product literature discusses the advantages, beyond simple cost considerations, of putting these functions on separate chips.

However, we can guess that the goal for SACD players is for the LSI chip that removes the encryption to also produce the analog output. That way, the in-the-clear datastream need never be taken outside that chip. However, this is hardly a low-cost solution, as analog and digital electronics must be made to coexist on the same chip, adding manufacturing complexity. The problems Sony now overcomes through the use of separate chips will have to be overcome in a different way, or the degradation may have to be lived with.

Note that Sony understands these problems clearly, and discusses them in depth in its current literature on the SCD-1 and SCD-777ES. They point out problems with a 1-bit system in what they call the amplitude and time axes, and discuss complex and expensive solutions to overcome the problem.

One very significant problem they do *not* discuss is the aliasing of the very-high-level noise near half the sampling

rate back to the audio baseband. To achieve close to the theoretical performance of the seventh-order modulator, interfering clock signals on the reference voltages must be attenuated by as much as a million-fold if true 20-bit performance is to be achieved. This is clearly impossible. To prevent noise or tones in the high-frequency region of the 1-bit spectrum from being folded into the audio base-

band, op-amp performance must be exceptional. Nonlinearities in the op-amps, including those caused by slewing, can cause this problem.

So if circuit complexity is not necessarily reduced by storing DSD-encoded data on a SACD, with no cost savings to be found, again—why would Sony and Philips do this? Here is my guess, informed by some deep-background info I was given by a Sony employee:

Why use a 1-bit system rather than LPCM? SACD advocates like to point out that the digital signal path is significantly simplified by the elimination of the decimator, interpolator, and DAC noise-shaper. However, this may be a cover to hide the real reason for moving to SACD: storing the data as a single-bit datastream allows better copy-protection than does PCM. Because all bits are equally important in DSD—unlike in PCM, where the MSB is most important and the LSB is least important—intentional bit errors, properly executed, would be inaudible but detectable. Maybe they can be made detectable even after being recorded on analog systems. These bit errors could be SACD's equivalent of the perceptually coded "watermark" so often talked about in connection with DVD-A, or it could be something else. (Information is impossible to come by.)

Why am I skeptical about the "simple signal path" explanation? In addition to the practical problems of converting an SACD datastream directly to analog that I discussed above, the proposed simplified signal path assumes no signal processing between the digital tape recorder and the SACD

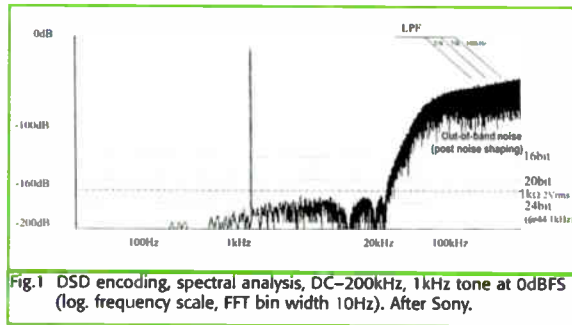


Fig.1 DSD encoding, spectral analysis, DC–200kHz, 1kHz tone at 0dBFS (log. frequency scale, FFT bin width 10Hz). After Sony.

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mastering process. Even something like mixing a multitrack recording—mixing can occur directly on a delta-sigma stream—results in a multibit stream, even if the mix occurs one-to-one. While it is possible to equalize and even add reverb in the delta-sigma domain, this again results in multibit streams. Once we have a multibit stream, we must convert it back into a 1-bit stream using a digital process similar to noise-shaping. These operations will have to be repeated many times as cascades of EQ and mixing operations occur.

Yes, pro audio companies are introducing the EQ and mixing tools to allow engineers to work directly on material recorded in DSD. But it is fair to point out that, unless studios are completely redesigned, it is highly likely that SACD signals will be converted to PCM signals to allow mixing, equalization, editing, etc., using current digital equipment. And at the consumer's end, it is very difficult to implement digital room-correction systems and digital loudspeaker crossovers in the SACD domain. Even if this becomes possible, we will once again be faced with a multibit stream that must be processed back to a 1-bit stream.

Again, any processing of the 1-bit stream on the user's end assumes that it will be available at the output of the SACD player. For copyright reasons, this is something that might never be made available.

What is clear is that the Sony/Philips Super Audio CD system does not perform to the same level as the best LPCM converters now available. The best ADCs' delta-sigma modulators, for example, produce four times the data per second as DSD, which means a lower noise floor and lower levels of distortion than can be produced with DSD (assuming the same loop-filter order).

In addition, even though current chips can perform, at best, only at a true 19-bit level, DVI-A offers a capacity of 24 bits. We can expect the number of bits produced by the finest ADCs, and the sampling rates at which they operate,

to continue to increase in the future as chip designers attempt to come as close as possible to the 24-bit performance level. Advances in silicon-chip manufacturing that allow the development of very fast microprocessors—including copper interconnects, trench isolation, and high-energy implantation—can be applied to speed up the sampling rate of ADCs as well as allow them to encode more bits per sample. In addition, the introduction of very-high-speed BiCMOS-process technologies developed for radio-frequency systems, including new silicon/germanium bipolar devices, will allow the analog circuits in delta-sigma-based ADCs to work well at these higher sampling rates.

And keep this in mind: Burr-Brown already produces DACs that do 96kHz sampling with 24-bit resolution—resolution, *not* the levels of noise or distortion—and which use no feedback. Using the very-high-speed converters designed for cellular radio applications, it is already possible to do A/D conversion at the 18-bit level without significant feedback. Would such converters give better sound than the delta-sigma ADCs used to make current 24/96 recordings? (And these delta-sigma ADCs, oversampling at twice DSD's rate and using at least three-code quantizers within their delta-sigma loops, are already better than DSD's 64Fs 1-bit converters.) We don't know the answers to these questions.

While CD was introduced as “perfect sound forever,” it had only two channels of output, which put the lie to that statement right away—clearly, multichannel systems were required to create the sound of a good concert hall. Both SACD and DVD-A offer multiple channels; but with DVD-A, the space available for experimentation and improvements is almost infinite. With Super Audio CD, we are stuck with a system that cannot be improved. It is likely that SACD was brought to market not as a way of bringing audiophiles closer to the music, but of making digital audio more difficult to copy.

—David Rich ■

Throw Away Your CDs!

I am a pianist, inventor, successful businessman, and a longtime subscriber to *Stereophile*, *The Absolute Sound*, *Stereo Review*, and *Audio* magazines. I have been an avid audio enthusiast for 55 years and have never been satisfied. I have, in fact, been very critical of the sound reproduced by CDs. Recently, however, I purchased a Sony SCD-777ES SACD player at a generous discount from Anthony, at The Good Guys in Canoga Park, California.

Mortgage your home, send your wife and children out to work, do what ever you have to do—the sound we have been waiting for from the start of all this, 55 years ago, has arrived. This is not the subtle improvement one experiences when upgrading or replacing equipment. SACD will knock your socks off. The sound is mellow, smooth, and transparent. The harshness, noise, and thinness are gone. I am absolutely thrilled. You will never make a better investment in your enjoyment of music and corresponding enjoyment of life.

Throw away all of your CDs—the Super Audio experience is overwhelming in every regard. After listening to SACD, you will accept nothing less.

The available music is limited to about 55 titles [at the time of writing, February 2000—Ed.] and most of the classical stuff was originally recorded 40 years ago. It's amazingly good, considering how old it is, but it's many worlds

apart from some of the very recent recordings supplied with the excellent Telarc sampler: “Children Will Listen” from *Into the Woods*, and “Deep Purple” from the Dave Brubeck Quartet.

The only sources for SACDs I have discovered are Tower Records, Acoustic Sounds, and Music File. Tower gives a reasonable discount, and I have just learned that Amazon has acquired Music File.

My first bit of advice to purchasers of the Sony SACD player is to remove the screw at the rear of the unit that prevents switching from operation in Standard mode to Custom mode. In Custom, the frequency spectrum is substantially greater (as Sony indicates in the SCD-777ES manual), and the sound is far better. Sony indicates that in Custom mode you might damage your other equipment, but do it anyway—the sound is worth whatever risk, if any, there might be.

We finally have what we sound/music obsessives have been passionately dreaming about all of these years. It is our duty to make certain that the inferior DVD-Audio does not become the medium of choice thrust upon us for reasons other than excellence.

Thank you, Sony; I am forever grateful. Now, about that next model...

—Paul S. Cooper, Los Angeles, CA

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Is It a Speaker Or a Coffin?

Bringing Audiophile Wives & Significant Others Into the Listening Room

GiGi Krap

When my best friend, Linda, came to visit, she walked in the door, took one look at the huge high-end stereo speakers that occupy important positions in my family room, and stopped dead.

"Those are *too big*."

"But Linda, they *sound* wonderful. Did you bring your CD? I'll play it for you."

She smiled and batted her lashes. "Yes, I'd like that."

Linda is a professional musician with perfect pitch. By day she's a music teacher, by night she plays piano and keyboards and sings in various musical environments. Today she'd brought me a promotional CD that she'd recently recorded. After listening to it in my family room, she had to admit that it sounded wonderful... but my speakers were still *too big*.

"But not," I said, "if you have a special room just for your stereo."

"Oh, *that* would be okay."

My audiophile husband's friends love the big speakers' sound quality, but even they say "What *are* those things? They look like coffins." A well-known audio reviewer once commented that he wanted to be buried in his big, coffin-like speakers. I guess that meant he liked them.

I learned to love music because I was brought up in a musical family. When I was very young my parents took me to the ballet, the opera, and classical concerts. When I got older, I went to rock concerts and jazz festivals. Two years ago, I had the sad experience of accompanying my Dad to the funeral home to make arrangements for my Mom's burial. A softspoken man in a three-piece suit wrote down all the information and handed us a bill big enough to purchase a pair of high-priced speakers and a state-of-the-art amplifier. He took us upstairs to a huge room filled with coffins of every imaginable color and shape, from a plain pine box to a silk-lined work of art in hand-finished mahogany. The diversity of design was dazzling, and so were the prices: The mahogany coffin was \$50,000.

As I looked around the room, I noticed several things: a) there were no cables; b) you only needed one box; and,

most amazing of all, c) these boxes didn't play music; the room was filled with dark, heavy silence.

I'm not suggesting that your wife or significant other should let you buy expensive, coffin-like speakers but bury you in a plain pine box. I'm saying only that we cram our living rooms full of big, expensive equipment because we enjoy music so much. If you want your W/SO to appreciate the quality of your high-end equipment, then you must introduce her to the beauty of music.

I have a three-step plan...

Step 1: The Room

Is your high-end system a tangle of wires and a hodgepodge of mismatched equipment? Do your speakers look like coffins and your amplifier like a microwave oven? No wonder your W/SO complains.

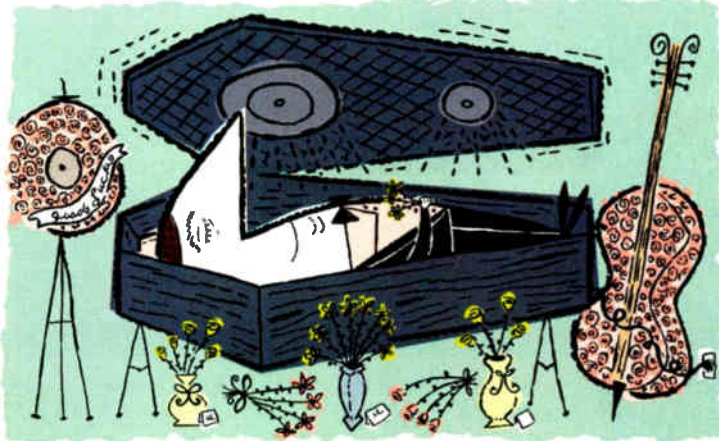
A woman's home is a reflection of her personal style, just as your audio system is a reflection of your musical acumen. How do you think she feels when she visits a friend's perfect house, only to come home to that mess in the living room? Instead of those homemade speakers with their unfinished cabinets and naked drivers,

think about getting a pair of professionally built and designed speakers in the same wood finish as the other furniture in your room. Ask your W/SO to choose a rack or wall-unit that coordinates with the rest of the furnishings.

While you're at it, find a nice cabinet for the CDs and records so that they're not piled up all over the place. Tie up the cables, or run them under the rug or behind the baseboard molding. Ask your W/SO to help with window treatments so that they complement the room visually *and* acoustically. Choose a nice rug and wall hangings to further enhance the décor and acoustic. The attractive designs of much modern high-end gear make it easy to set up a system that looks *and* sounds good.

You *can* have a sound room that both you and your W/SO can be proud of.

Do you come home from a busy day at work, eat a quick dinner, and immediately run to your music room to try a



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The Sensible Sound

new cable? Or do you rush over to your computer, log onto the Internet, and sit there until 3am sending e-mails to your audio buddies? When your W/SO enters the room to ask a question, do you snap, "Leave me alone, I'm busy!"?

Spend a little time with your W/SO. Help her clean up after dinner. (This should really shock her.) Talk to her about the new cable and invite her into the music room to listen. If your W/SO must compete for your attentions with your stereo and computer, she'll hate them both—and, eventually, you as well. Soon she'll be saying things like, "You love that stereo more than me." Turn her enemy into a friend. Here's how.

Step 2: Don't Ignore Her

The next time a really good orchestra or jazz ensemble comes to town, buy tickets to the concert. (Make sure you pick some mainstream music and a concert hall with good acoustics, and buy *four* really good orchestra-center seats.) Tell your W/SO that you want to take her out on the town. Suggest that she visit her favorite department store and purchase a new dress for the occasion. (This plan may sound expensive, but it's still cheaper than those \$5000 speakers you want.) Invite an audio friend and his W/SO along for the evening and make reservations at a really nice restaurant. Make all your arrangements in advance to ensure that the evening is a big success.

During the concert, whisper romantic things in her ear, such as, "The violins are on the left; can you hear them?" or "Pay attention to this piece—listen to how sweet the flutes sound."

Step 3: Love the Music


During the intermission, take her out for a glass of champagne and chat with her about the design of the concert hall—the beautiful drapes, the carpet, the wall sculptures—and how everything contributes to the sound quality. On the drive home, ask her what she liked most about the concert and which piece was her favorite. *Listen carefully* to her comments.

The next day, go to your favorite CD store and pick up a good recording of whatever work she'd most enjoyed the night before. A few days later, tell her that you have a surprise for her. After dinner, open a bottle of wine, invite her into your new, beautifully designed listening room, and dim the lights.

Play the new CD on your good system and ask her to listen. Give her a big smile and ask, "Do you recognize it?" Chances are that she will. "Listen to the violins and the flutes—do they sound similar to the concert? Does the music make you feel good?" With a little luck, you'll get a positive response.

After the music is over, play her the same piece, this time in a sound system of lesser quality. She might say, "Wow, what a difference!" or "The first system sounded just like the live concert, but this one..."

After that evening, take her to a diversity of concerts in different venues: classical, jazz, musicals, even rock'n'roll. Let her choose which shows to attend. After each one, purchase and play her favorite music from the previous night's concert.

Follow this procedure for several months. Make your W/SO a part of the musical experience and one day she will exclaim "Honey, *now* I understand why you bought this expensive equipment and these big, ugly speakers—because you love the music. So do I." 

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—Dick Olsher, *CES 2000 report*,
EnjoyTheMusic.com

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—Bill Wells, *The Audiophile Voice*

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—Andrew Chasin, Groovenoise.com

“I walked into the Nirvana and Wavelength Audio room to be greeted by a pair of eye-popping Avantgarde loudspeakers. This was my first experience with these horn loudspeakers and I was rewarded with a positive experience. The midrange did not have that cupped-mouth, hollow sounding hoot that most people associate with horn loudspeakers. In fact the midrange was open and clear with a slight warmth to the sound that added balance to the overall sound...this system will really change audiophiles' perceptions of good sound.”

—Gregory Kong, *CES 2000 report*, planethifi.com

“Absolutely Amazing.... The response of those who have heard the unbroken-in speakers (DUOs). Imagine after they are broken in.”

—Jamal Instrum, *Foss Audio*

“Needless to say, they are awesome. I totally agree with your premise that the music's message comes through! Two quite obvious events convinced me:

1) I constantly tapped my feet while listening—even to music I normally wouldn't listen to.

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They are certainly everything you said they were. I don't ever recall listening to any speakers that were more totally satisfying.”

—Dr. Ron Stroud

“I have NEVER experienced anything that seems to so closely tie the listener to the emotions the artist is expressing. It was as if you were wiring your preamp to my brain. Sound staging, timber, speed, dynamics

are all there, but these horns do something else to the listener that I have never experienced.

I was overwhelmed, especially with the sad, emotional music we were playing at first. Indeed, I found them powerful—emotionally...”

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“As far as soundscape and imaging goes, the UNOs ability to “pressurize,” or fill my room with a full and complete soundscape, was awe inspiring....

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These speakers are so transparent that they will, I repeat, *will* tell you about the synergy of your system or lack thereof. In my listening room the UNOs’ unbelievable all out clarity and immense dynamic capabilities was enough for me to part with my own hard earned cash. You just might too. In the end what *really* matters is that *you*... Enjoy the Music.”

—Steve Rochlin, EnjoyTheMusic.com

“Up until now I have had reservations about horns. ...As a consequence I had expected the DUOs to sound coloured, ultra-dynamic, and to a certain extent the sum of two rather obvious parts. That is not the case.

...They can exhibit stunning ranges of subtlety, dynamics and ultimate loudness...exemplary imaging to recordings...pretty much seamless top-to-bottom even frequency response in-room...very uncoloured...transparency that many speaker systems are still striving for. They have an uncanny presence and immediacy ...dynamic range matched more closely to real life than anything else I have heard.

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Electrostatics now have a serious contender in the transparency stakes. These horn systems are so revealing...it’s hard to imagine using anything else. My favourite reference speaker is now ousted in favour of these music-making devices. Don’t be swayed by people telling you they don’t perform and are coloured. These speakers make music in a way that you simply can’t argue with.”

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Still Slow Turning

John Hiatt speaks about Napster, his new acoustic set, Crossing Muddy Waters, and the wonders of corndogs.

DANIEL DURCHHOLZ



Amid the unfettered opulence and antique furnishings of the St. Paul Hotel, veteran singer-songwriter John Hiatt sits, musing about the decidedly more plebian wonders of the Minnesota State Fair, in full swing a couple of miles away.

"You know, they've got more fried food there — and it's all on a stick. They have fish on a stick, meat on a stick. One place, they just have a huge hunk of fat —

“Watts up with Powered Subwoofer specs?”

Matt Polk, Speaker Specialist

The higher the wattage rating on a Powered Subwoofer, the better the Sub, right? Not always.

All Watts Are Not Created Equal

In fact, power specs can be very misleading. A thorough Subwoofer power spec would look something like, '100 W Continuous Average Power @ 4 ohms, with no more than .1% THD, from 30-200 Hz.' See *this* spec and you know the power was measured rigorously for a sustained period. It's a more complete picture of an amplifier's power performance under real world conditions, instead of just an optimistic sketch like '100 Watts @1K Hz,' or '100 Watts Peak Power,' or even '100 Watts.' That's like quoting a car's acceleration as '0 - 60 MPH in 6 seconds, downhill with a stiff tail wind.'

The Feds Chime In

Power ratings have become so confusing that the Federal Trade Commission (FTC) recently issued new rating regulations. According to the FTC, all power specs should be quoted as: 'Continuous average power into a stated impedance, at a stated distortion over a stated bandwidth.'

We think this is terrific. It standardizes power testing methods, and provides you with a 'level playing field' for comparison shopping. We've started listing *our* specs this way, but it could take some time for everyone else to comply with this regulation and revise their specs. When you're shopping this holiday season, be wary of products that quote only 'optimistic' power numbers.

Do Numbers Matter?

Subwoofer power ratings—real or bogus—don't really tell you much. Why? Because *efficiency* is the most important factor in determining how loud any speaker

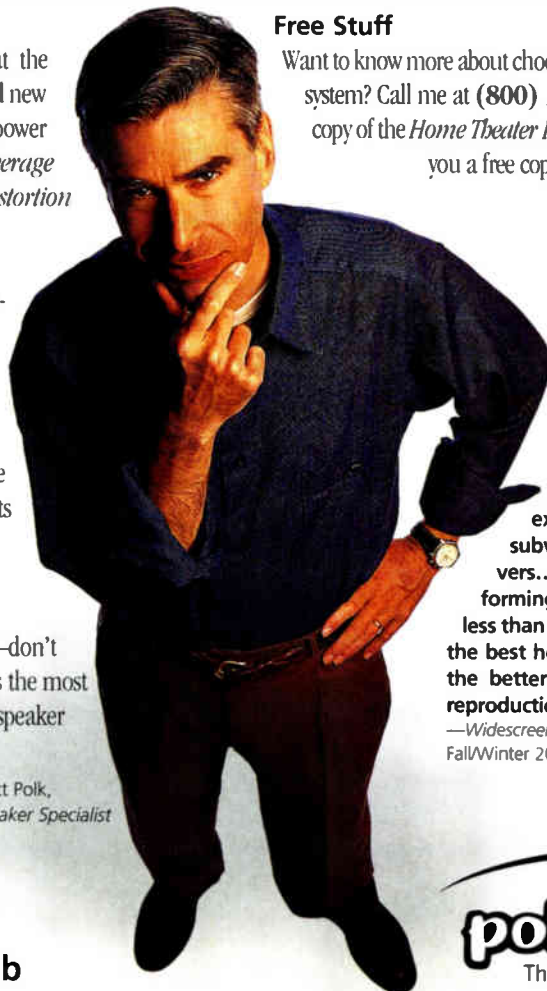
(including powered ones) will play. Efficiency is the measure of how much sound the speaker puts *out* for a given amount of power *in*. A speaker that is a mere 3dB more efficient needs only *half* as much power to reach a given volume. (So a 200 Watt, self-powered subwoofer may not play *any* louder or sound *any* better than a more efficient 100 Watt sub!)

Numbers Numbers...How Do You Know?

Numbers aside, there's no better way to judge the quality of a Subwoofer than to listen before you buy. Does the Subwoofer play loud without distortion? Does it add a deep bass foundation, or does it just boom; is it musically 'tight' and well defined, or does it just add a vague rumble? Trust your ears.

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Matt Polk,
Speaker Specialist



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—Widescreen Review Subwoofer Buyer's Guide
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breaded fat!—on a stick. I tell ya, man, you get a couple of corndogs in ya, you feel like a million bucks.” Hiatt is in the Twin Cities to play a pair of late-summer gigs at the fair with his once and future backup band, the Goners, with whom he’s reunited after 11 years. He’s excited about playing once again with the Louisiana trio of Somy Landreth (guitar), David Ranson (bass), and Ken Blevins (drums),

know, back in those days, they were steam-powered. So my kids grew up on computers. They sit there and multitask and carry on a conversation.”

One of the websites visited regularly from the Hiatt house is, surprisingly enough, the dreaded Napster.com, which has caused endless gnashing of teeth and rending of garments in the high offices of the major labels, as well as in the courts and even in Congress.

“Yeah, we have Napster. We’re nappin’. It’s great,” Hiatt says. “My 16-year-old daughter discovered it a month ago, and she’s downloaded 50 different live versions of songs by Pearl Jam. She came to me the other day and said, ‘You know, Dad, since I’ve been doing Napster, I’ve bought 10 new CDs.’ And I thought, ‘Isn’t that what it’s all about?’

— JOHN HIATT

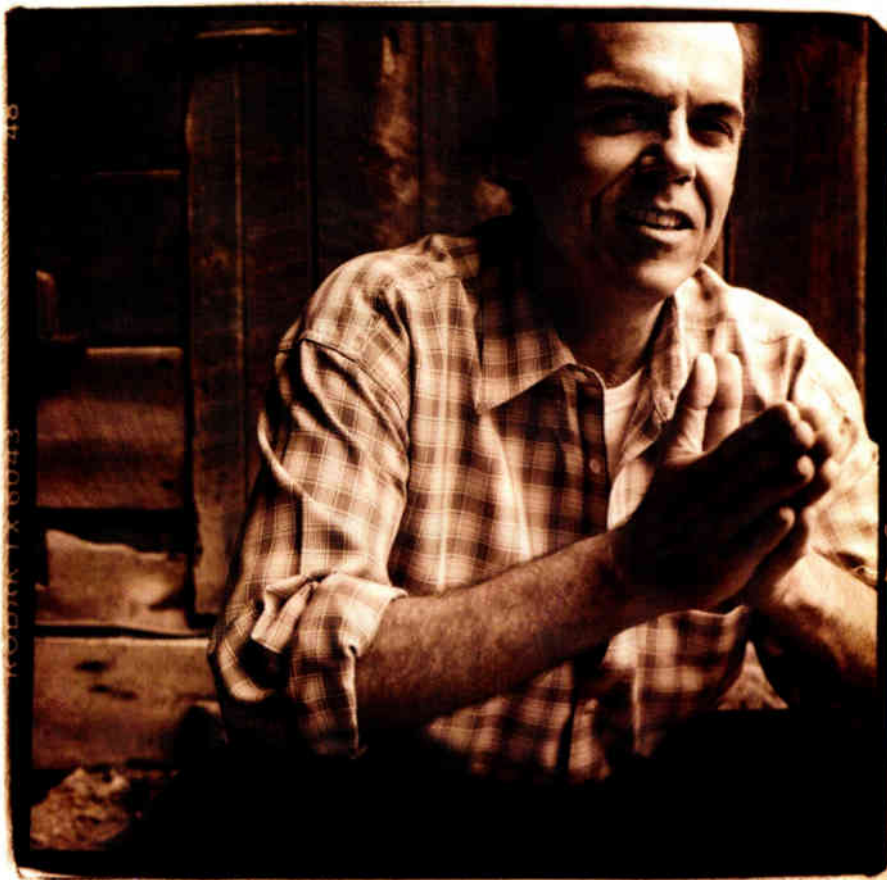
“I know there are problems, but let’s work those out. Instead of ‘I’m gonna cut you guys’ balls off’ (that’s sort of the corporate-record-world version of how to deal with things), ‘We’re just gonna put you out of business’—it’s like, *deal with it*. The record companies were just caught with their pants down. Somebody had the technology, and they were just so far ahead of the ninnies that sit up in the record-company towers and take too many damn vacations. It’s

“ ‘I’m gonna cut you guys’ balls off’ (that’s sort of the corporate-record-world version of how to deal with things) — it’s like, deal with it!”

who last backed him on 1988’s *Slow Turning*. Hiatt’s also anxious to talk about *Crossing Muddy Waters*, his new all-acoustic album, being released on the Internet through EMusic.com, and through conventional means by Vanguard Records.

“I’d love to say there was more planning involved in putting this record out, but the fact that there’s not is usual with me,” Hiatt says. “We got out of our situation with Capitol [Hiatt’s former record label], and had to spend a few months doing that. I was about three-fourths of the way through a record with the Goners and didn’t want to leave it behind. So we had to do a little finagling, and when we finally got off the label, my manager, Ken [Levitan], said, ‘You want to make an acoustic record? ‘Cause EMusic and all these Web companies will just put it out on the Net.’ I just went, ‘Yeah, man.’ It was kind of a reaction to six months of haggling with the corporate business world. I thought, ‘Let’s make some *music!*’ ” Hiatt is old enough to be excused for not being computer-literate, much less keeping up with the issues and opportunities presented to artists by the Internet these days. But thanks largely to his wife and kids, he’s right on top of things.

“My wife—she had a computer back when they cost \$6000 and had a 25MHz processor,” Hiatt says with a laugh. “You



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called competition. Unfortunately, the corporate approach to that is to try and annihilate the competition."

In leasing his new album to EMusic and to Vanguard, Hiatt hasn't taken the giant leap of artists such as Ani DiFranco, John Prine, Emmylou Harris, Steve Earle, and Prince, who formed their own labels in defiance of the corporate attitude that music is a failure if it can't keep pace with the sales of 'N Sync and Britney Spears CDs. Still, Hiatt thinks that what he's doing is a step toward seizing control of his own work and determining the direction of his career.

"This is the first record of mine that I own," he says. "EMusic and Vanguard can put it out and market it for five years, then the ownership reverts back to me. The record that we got back from Capitol, the one with the Goners, we'd like to put that out in the spring of the new year. There's been some interest with some other majors, but we kind of like this free-agency thing. We're going to see how it goes."

Hiatt has reason to keep the big labels at arm's length — after all, you don't leave a label unless the partnership has broken down in some fashion, and over the course of his career, now spanning more than a quarter century, Hiatt has been through six: Epic, MCA, Geffen, A&M, Reprise, and Capitol. So it's no wonder that he sees the increased democratization of power in the music business as a positive thing.

But Hiatt also has reason to be especially protective of *Crossing Muddy Waters*: Intended as it may have been as a relatively quick and amusing treat for artist and fans alike, it's turned out to be one of his finest efforts. Given that Hiatt's extensive catalog includes such gems as *Bring the Family*, *Slow Turning*, and the raucous *Perfectly Good Guitar*, that's saying something.

Recorded in just four days at a studio around the corner from his home near Leeper's Fork, Tennessee, *Crossing Muddy Waters* is toned down, perhaps, but doesn't lack for intensity. Its 11 songs feature Hiatt on vocals and guitar, with the Nashville Queens: Dave Immergluck on mandolin and guitar, and Davey Farragher on bass ("he's the one stomping his foot," says Hiatt). Justin Niebank, who has manned the boards for numerous rock and blues albums and has dabbled in techno music as well, produced the album.

Most of the songs were written in the last year, Hiatt says, but when he began the project, he made a list of 20 older songs that, for one reason or another, he'd never recorded. Of those, three ended up on the record: "Lincoln Town," "Only the Song Survives," and the title track.

To write the rest of the material, Hiatt says he drew on "my earliest inspirations. You know, when I first picked up a guitar at 11 — what would that have been, '63? — we just wanted to do Beatles songs and Who songs, Mitch Ryder, whoever was happening on the radio. But by the time I hit 14, 15, I discovered Bob Dylan, and for me, he was the gateway to all the blues and country blues and American Roots



music. So through him I discovered guys like Mississippi John Hurt, John Estes, Lightin' Hopkins, Muddy Waters, Willie Dixon, and, gee whiz, so many others. It all came about through listening to 'Sad Eyed Lady of the Lowlands' over and over again for about a year." [laughs]

Those influences can be heard most directly on "Lincoln Town," a stomping country blues; the moaning "Mr. Stanley"; and "Lift Up Every Stone," a rousing gospel-style raveup.

"You know, the inspiration for songs... I kind of look at it like shrapnel that you've picked up over the years, and something, a piece of it, will move in your body after 20 years and hit a little nerve, and you'll remember that little piece of shrapnel and something will come out of it. I remember taking one of my daughters to a party, some little party at a kid's

house that we'd never been to. I took her up to drop her off, and I met the little girl's parents, and I overheard the woman at one point trying to tell somebody else where you drive out to leave. They had a big property, and she said, 'You just go down there until you get to my slave wall, and then you take a right.' And I was like — 'my slave wall' — it just rubbed me the wrong goddamn way.

"But that was the inspiration for 'Lift Up Every Stone.' The story — I love telling a story where you don't exactly know who's doing what. Obviously something happened, somebody died, and somebody is going to get blamed for it, probably not the right person — kind of like the American justice system!

When we cut that, we felt like the ghosts were coming up out of the front pasture. It was pretty emotional."

Equally emotional is "What Do We Do Now," a devastating portrait of a relationship stuck between gears. Hiatt readily admits that it was based on a particularly wrenching personal experience. "We've been married 14 years, my wife and I, and at about five years, we hit a wall," he says. "And you know, if the 'D' word is ever uttered, it's a scary thing. We didn't want that, but we wondered, 'Is that gonna happen?' I just remember, it was a tough year for us, and that's what I was trying to tap into.

"Some time later, I sort of befriended a guy, Dan Fouts, who used to quarterback the San Diego Chargers. He's a great guy. We met because I've done a couple of benefits for his wife, and when he first heard that song, he said, 'Man, we used to say that in the huddle all the time, when we were getting our asses kicked.' And I thought, 'Well, it is pretty universal, that feeling of total helplessness.'"

Hiatt, of course, has never shied away from delving into personal issues. He donned various guises early on in his career — that of rock'n'roller, neo-folkie, and, oddly, brash New Waver ("the American Elvis Costello," he was called in some circles). But he found his true platform at last on the rootsy *Bring the Family*, an album that marked a change in his life in more ways than one.

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With his career in turmoil in the early '80s, Hiatt had sunk into an alcoholic haze and, at the same time, suffered the suicide of his first wife. One has only to look at the deathly pallor of Hiatt's face on the album covers of *Slug Line* and *Riding With the King* to know that all was not well. He entered rehab in 1985, and moved from Los Angeles to Nashville, which had been his first home away from his native Indianapolis back in the early '70s.

He remarried, and the lyrics of *Bring the Family* and the two albums that followed, *Slow Turning* and *Stolen Moments*, are sometimes celebratory, sometimes self-excoriating, but always brutally honest reflections of what he was going through at the time. Songs like "Have a Little Faith in Me," "Through Your Hands," "Feels Like Rain," and "Thank You Girl" are among his finest work, and the record-buying public picked up on them, putting Hiatt on the commercial map for the first time.

"*Bring the Family*, to me, was like, you know, I finally have a career," Hiatt says with a laugh. "It felt like I had my foot in the door, finally. So everything was up from there. A number of things just came together around then. My personal life had been a mess. I'm one of those artists who... I kind of grow artistically as I grow personally. I guess everybody does to some degree. But the more I've gotten my shit together as a human being, the better the music has gone."

It wasn't as if no one else had noticed. In addition to his own commercial upturn, Hiatt's songs were suddenly ripe for numerous cover versions. Artists including Bob Dylan,

Bonnie Raitt, Rosanne Cash, the Neville Brothers, Willie Nelson, Emmylou Harris, and many others have recorded his material, making it equally at home on rock and country albums. That's something of a surprise when you consider that Hiatt, in "Memphis in the Meantime" from *Bring the Family*, berated mainstream country by singing "I don't think Ronnie Milsap's gonna ever record this song."

In fact, Milsap *has* recorded a Hiatt song, "Old Habits are Hard to Break." Reminded of that fact, Hiatt notes, "You know, lately when we do that song, I replace his name with Tim McGraw. I'm hoping for a Tim McGraw cut. I figure if I mention people in that song as not ever doing one of my songs, then they probably will."

He's kidding, sort of. Hiatt says he doesn't really seek out cover versions, but is happy when they come along. "Put yourself in my place," he says. "If you wrote a song and somebody decided to do it, wouldn't that just thrill you to death? It's been great, and it's sort

of been the surprise part of my career. In fact, I don't write for other people. I've never been able to do that. I just write, and I guess because I write a lot, there's always stuff for people to record."

His work habits, however have changed over the years. As other parts of his life crowd in—there's his role as father of three, of course, plus his hobby of driving Pro Challenge

"The more I've gotten my shit together as a human being, the better the music has gone!"
— JOHN HIATT

Trucks on a racing circuit in Tennessee, as well as his part-time job as host of the PBS series *Sessions at West 54th*—songwriting can sometimes seem to take a less important role. But that's all right, he insists.

"I have no disciplines," he declares. "I don't have any kind of a daily exercise. I can write five songs in a week, and then I won't write for two months. And whereas in my earlier years, two months without writing would freak me out, two months without writing doesn't bother me in the least now. As you get older, you can go two months without doing a *lot* of stuff." [laughs]

"It's funny—when you're younger and you have all the time in the world, you don't think you do. And when you get older and you're running out of time, you feel like you've got all the time in the world. What's up with that?"



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"I'D SPENT MORE TIME WATCHING MOVIES IN THE MONTH I HAD THE HTP/HT600 THAN I DO IN A NORMAL MONTH."

-Ken Kessler, Hi-Fi News & Record Review, September 2000

Home theater has been around almost forever now. So why did Musical Fidelity wait so long to come out with surround sound components? Keeping up with the times isn't the problem. Antony Michaelson and crew are one of the most innovative design teams on the planet. But they are notoriously fussy. Unless they can deliver better performance for the money than anything else on the market, they won't even bother releasing a new product.

Musical Fidelity's new HTP Dolby Digital/DTS processor and HT600 five-channel amplifier were designed by and for perfectionists. The HT600 five-channel amp uses the same circuitry as the ecstatically received A3^{CR} power amp, but without the choke regulation. Sound quality is better than Musical Fidelity's acclaimed X-AS100 and reminiscent of the A3^{CR}. The huge dynamic range, silky uncolored sound quality, and natural expressiveness set new benchmarks for five-channel power amp performance.

A peek under the hood reveals the fanatical design. It's configured as five separate monoblock amps. Most home theater amps use just one power supply, and all five channels share a single circuit board. The HT600 is as discrete as discrete can be. It's got five individual power supplies. Circuit boards are generously separated to absolutely eliminate interaction between channels. The result is pinpoint channel imaging, enhanced detail recovery, and an ultra-clean audio signal.

The HTP home theater processor doesn't merely do a good job decoding Dolby Digital and DTS audio signals. It delivers true audiophile performance. Separate power supplies are provided for each of its five sections: audio, video, digital, control electronics, and DSP. Each power supply uses extensive RF filtering so that no section can interfere with another.

Equal care is taken with the video signal. The HTP's video inputs are located on a dedicated circuit board, preventing the video signal from "trekking through the whole amplifier," as Antony Michaelson puts it. The result is a superlatively clean video signal that doesn't pick up noise from the digital audio processing circuits.

For the most demanding fussy budgets, the HTP has a separate dedicated video output that completely bypasses the on-screen menu control system. No switches are involved in the process. Your eyes will tell you that the payoff is worth the extra fuss.

Whether reproducing movie soundtracks or special effects, the Musical Fidelity combo is unbeatable. "The sonic performance was treated to the same regime as pure music, and it shows," concludes Kessler. "What's so deliciously ironic is that the MF system is unfazed by the purely cinematic excess of whatever Bruce Willis is blowing up at the moment." The biggest surprise of all? That would be the price: Under \$3K each.

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Musical Fidelity components are available in the U.S. exclusively at Audio Advisor.

If you search for "DVD-A" on www.stereophile.com, you find the whole confusing story of the format, which has been the subject of one of the strangest product launches of recent years: First it's on, then it's off. The watermark is audible. No, it's not. Oops, it is—back to square one. There's software, there's no software. (There's *not*—only one demo disc officially available at the time I wrote this review!)

I fixed K-10 with my best whodunnit look. "So, *ma chérie*... who's on first?" She gave me one of *her* looks.

I should have said "*Who's first?*"—with machines on dealers' shelves, that is. That would be Technics, with the DVD-A10 DVD-Audio/Video/CD player. For what it's worth.

Super Audio CD hit the streets a year ago amid similar controversy. "Hey, where's the software?" was (and remains) a valid beef. But there were at least a few SACD recordings you could buy to play on your Sony SCD-1 when it debuted, plus a couple of demo discs.

Description: Single-box DVD-Audio/Video player with remote control. Plays CD, DVD-A, DVD-V. **Outputs:** 2 pairs RCA line-level audio, one each coax and TosLink S/PDIF, full set 5.1 surround outputs on RCA, video, S-video, and component video. **S/N ratios:** CD, 115dB (EIAJ); DVD, 106dB (LPCM). **Harmonic distortion:** DVD, 0.0012% (LPCM); CD, 0.0017%. **Power consumption:** 26W.

Dimensions: 16 ¹⁵/₁₆" (430mm) W by 4 ¹⁵/₁₆" (125mm) H by 10 ¹³/₁₆" (275mm) D. **Weight:** 18.9 lbs (8.6kg).

Serial number of unit reviewed: None.

Price: \$1199.95. Approximate number of dealers: 200.

Manufacturer: Panasonic Consumer Electronics Company, One Panasonic Way, Secaucus, NJ 07094. Tel: (800) 211-7262. Fax: (201) 348-7209. Web: www.tech-nicsusa.com.

To be fair, there was a lag before a diversity of music became available, and, as I write, even that numbers only some 100 recordings—not exactly a landslide—most of them mastered from old recordings (and a number of which, reassuringly, I have on LP).

Sony demonstrated multichannel SACD at the 2000 CES last January, but we haven't heard much about it since then. I *have* reviewed, however, another two-channel SACD machine in the interim—the Marantz SA-1, in the September issue.

What's going on here? On the face of it, reviewing a machine with but one "official" sampler disc (plus another, VFV0156, marked "FOR INTERNAL USE ONLY") is a little bizarre. But DVD-Audio is the Next Big Thing—or, as Technics would have you believe, the *only* big thing. They're taking great pains to position the DVD-A10 as a high-resolution *audio* device with up to two channels of 24-bit/192kHz information, so that's how I auditioned it. Never even hooked it up to our old Sony 27" XBR TV. I took DVD-A seriously as a music-delivery format and compared it to SACD and CD "Red Book" 16-bit/44.1kHz recordings in two-channel mode exclusively. But as the DVD-A10 is a DVD-Audio/Video player, rest assured that one of our intrepid reviewers will continue the investigation in multichannel mode.

But, for the nonce, two-channel it was.

The Tour

The DVD-A10's brushed champagne finish is very Upscale Nippon, with a dose of quasi-'60s *Wallpaper...* magazine lifestyle thrown in, for you Stylemeisters. The panel lights above the pushbutton controls are aqua blue; very *Gidget Goes to Rome*. The front-panel controls on the right are familiar, with the addition of a "Group" button to the standard Play, Pause, Stop, Skip, and Search controls. Fascia left sits an Audio Only toggle and indicator, which turns off the noisy video circuits. (I always activated it.) Next to that was the Re-Master LED, about which more shortly, and an LED for the V.S.S. (Virtual

Surround Sound) feature. Finally, I always paid attention to the other two indicators on the left, one for Multichannel (three or more channels detected), the other for Two-channel.

V.S.S. is meant to be used with the headphone jack and level control you'll find on the lower left of the front panel. It's said to offer the surround experience with 'phones or two-channel setups. I suggest you avoid this feature unless you're up for a semi-'60s psychedelic experience *mit* acute psychosis. Mud, mud, and more mud—very Woodstock.

'Round back is a full array of connectors, including two pairs of audio outs on RCA plugs, six RCAs for 5.1-channel analog surround, and two digital outputs on TosLink and RCA (S/PDIF), for an external Dolby Digital/DTS decoder or external DAC. (Yes, that means the DVD-A10 can be used as a CD transport.) Next to that are a full set of video outputs. Rather than the ubiquitous IEC mains-in connector, the A10 uses one of those small appliance AC inputs and cords.

The DVD-A10 is built fairly well for a mass-market item, weighing in at a hefty 19 lbs, with a multilayer honeycomb resonance-absorbing base and substantial footers. When you power it up, the display reads "WELCOME TO DVD WORLD"—*walk this way*. The remote is garishly golden and very Mondo Video—not especially ergonomic, but it gets the job done with a minimum of fuss, and it's definitely hard to lose. (I tried!) You have to slide the remote's lower cover down to access most key control functions for playing music.

MASHin' D-to-As

In addition to DVD-Audio discs,



Technics DVD-A10 DVD-Audio player



BILL KOURKINS STUDIO

recorded at a variety of bit depths and sampling rates, the DVD-A10 plays DVD-Video discs and “Red Book” CDs but won’t read CD-Rs. According to the paperwork, a single DVD-A can hold up to 400 minutes of two-channel stereo at 16-bit/44.1kHz resolution, or up to 74 minutes of uncompressed 24/96 six-channel surround or 24/192 two-channel. One layer of a DVD-A can hold up to 4.7 gigabytes of data — about seven times that of a standard audio CD.

Technics says that the “sampling frequency is an incredible 4.3 times higher than audio CD (192kHz vs 44.1kHz) and the quantization resolu-

tion is 256 times finer (24-bit vs 16-bit). *This translates to amazing two-channel stereo sound not even approachable by audio CDs.* (My italics.) Hey, where were these guys in the early ’80s, when Perfect Sound Forever debuted? Okay, I get it — *now* it’s perfect sound forever! [insert evil grin here]

There’s more: “This yields extremely high resolution and extraordinary dynamic range of up to 144dB (vs 96dB for audio CDs).” In fact, at the press launch for the ‘A10, an engineer from Japan made a big deal of the frequency analyzer display on Technics’ matching SA-DA10 receiver, showing that there was, indeed, information

well above 20kHz, and that it contributed to the sound.¹

As with the Marantz SACD machine, there wasn’t much technical information available. I’m not saying Technics/Panasonic is stonewalling, but, aside from some press releases, a brochure, and a white paper on Re-Mastering, I had little to go on. The following info was gleaned from those documents.

Traditional D-to-A converters, Technics posits, are “unsuitable for use with DVD-Audio, or too expensive to mass

¹ See John Atkinson’s article in the October issue for an examination on the high-frequency content in high-sampling-rate recordings.

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produce." Their position is that while multibit and 1-bit types are "acceptable," each has its drawbacks. Enter their own D/A system, which optimizes DVD-A by "combining some of the best characteristics of both types of DACs." They use newly developed MASH "noise-shaping" D/A converters to "reduce background noise to imperceptible levels. ... Like a multibit DAC, it can operate at high speed without running into the limits of electronic device performance, and like a 1-bit DAC, it is easy to make it into LSIs (Large Scale Integrated) circuits or IC chips."

Yesss, Masster ...

Technics' Re-Master function is very much part of the DVD-A10's overall design and an integral part of the system's operation. Re-Mastering relates back to Technics/Panasonic's New Awareness of over-20kHz information and its effects on reproduced sound.

"Although humans can only hear up to roughly 20kHz, strong evidence has shown that higher frequencies can

affect how we hear frequencies in the audible range. While you cannot directly perceive these higher audio frequencies, they can color what you do hear within the audible range."

Technics' Re-Master function is very much part of the DVD-A10's overall design and an integral part of the system's operation.

That's Technics talkin', and it's a mouthful. Both DVD-A and SACD effectively broaden the analog signal bandwidth over standard 16/44.1 technology. DVD-A does it by mastering the music using Linear PCM (LPCM) encoding at 96kHz or 192kHz with up

to a 24-bit bit depth. The anti-aliasing filter can therefore be more gentle on the broadband high-frequency signal content and so avoid the ringing endemic to the ol' brick-wall filter that cuts off everything above half the "Red Book" sampling rate, 22.05kHz. SACD does it with very-high-speed single-bit processing that's aggressively noise-shaped to push the noise associated with such wide bandwidths out of the audible range. In that respect, it's perhaps the less efficient of the two. [See David Rich's article on SACD elsewhere in this issue—Ed.]

Re-Mastering is Technics' effort to maximize CD sound quality by up-sampling. According to a graphic supplied by Technics, anything sampled at or above 88.2kHz, at whatever word length coming off a DVD, goes straight to the MASH DAC. However, 16-bit/48kHz material from DVD sources is routed through Re-Mastering DSP (digital signal processing) and upsampled to 24 bits and 96kHz. Data at 16/44.1, from DVDs or "Red

Measurements

There's no such thing yet as a test DVD-A, so I checked the Technics DVD-A10's performance using a miscellany of test CDs and the Chesky *Test and Sampler DVD-V*, which has 24-bit test tones recorded (by Kevin Halverson of Muse Electronics) at 48kHz and 96kHz sample rates. The Technics doesn't play CD-Rs, so I couldn't check its jitter behavior with the Miller Audio Research Analyzer. All measurements were performed on the two-channel outputs.

The maximum output level was 2.153V, 0.66dB higher than the CD standard of 2V RMS. The output didn't invert absolute polarity and the source impedance was 1000 ohms at 20kHz, rising slightly to 1025 ohms at 1kHz and 1037 ohms at 30Hz. Error correction was not as good as I've measured from other DVD players; the 'A10 skipped on the Pierre Verany Test CD's track 30, which has 0.75mm gaps in the data spiral.

The Technics' frequency response for CD replay was flat within the audioband (fig.1), and de-emphasis was perfect. Channel separation (not shown) was superb, at better than 110dB below 1kHz, with a capacitive rise of 6dB/octave above that frequency.

Fig.2 shows $\frac{1}{3}$ -octave spectral analy-

ses of the DVD-A10's analog output while decoding a 16-bit dithered tone from the CBS Test CD (top traces) and the Chesky Test DVD-V (bottom traces). The traces overlap in the low frequencies and are dominated by residual power-supply noise at 60Hz, 120Hz, and 180Hz. (All these 60Hz-related spurious are at or below -110dBFS, which is pretty good, if not as deathly quiet as the best CD playback systems.) In the midrange and treble, the increase in word length drops the noise floor by up to 12dB, implying an absolute performance for the Technics player of around 18 bits, which is good.

To generate the bottom traces in fig.3, the Technics decoded 16-bit data

representing "digital black." The noise is significantly lower than with even the 24-bit data in fig.2, suggesting that the

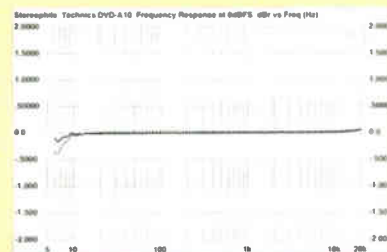


Fig.1 Technics DVD-A10, frequency response at -0dBFS (right channel dashed, 0.5dB/vertical div).

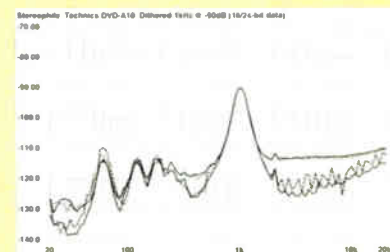


Fig.2 Technics DVD-A10, $\frac{1}{3}$ -octave spectrum of dithered 1kHz tone at -90dBFS, with noise and spurs, 16-bit data and 44.1kHz sample rate (top); 24-bit data and 48kHz sample rate (bottom). (Right channel dashed.)

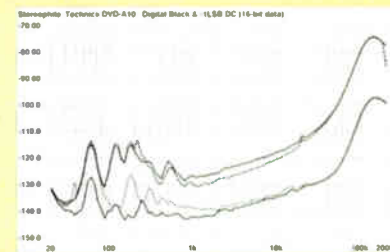


Fig.3 Technics DVD-A10, $\frac{1}{3}$ -octave spectrum of "digital black," with noise and spurs (top); and of -1LSB DC data (bottom), 16-bit data (right channel dashed).

Book” CDs, are Re-Mastered (upsampled) to 24/88.2. Bottom line: signals of 48kHz and below are always Re-Mastered. (You *can* turn Re-Mastering off, but you need a video monitor to do so. I used the DVD-A10 in its default setup mode.)

What exactly is Re-Mastering? Technics: “Re-Master Processing works by using DSP to create a high-range signal above 20kHz comprising a virtually natural harmonic structure and adding this to the originally recorded data on the disc, thereby extending effective frequency response into the ultra-high range. This means it is possible to enjoy superior sound quality even with current CDs.”

Whew! “even with . . .” I love it.

“Re-Mastering works by generating musical harmonics based on the original signal. Gaussian dither, a kind of random variation, is added, then the result is filtered and fed through a Spectrum Harmonizer, controlled by a Spectrum Detector, before remixing with the music signal data. The result is

a natural, musically appropriate extension of the spectrum of the original music. The output spectrum is continuous and there is no aliasing distortion. Digital Re-Master Processing can make CD reproduction nearly over-

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Japanese bamboo
in their conductors’
separators!**

take DVD-Audio in terms of high-frequency response.”

All other audiophile bases are covered. Capacitors are audiophile-grade TA-KE II types with Japanese bamboo in their conductors’ separators!

They’re encapsulated in a three-layer anti-resonance case with an external spiral copper coil. Advanced Virtual Battery Operation is another “technic” for preventing high-frequency power-supply noise from degrading sound quality as the AC fluctuates. The circuit uses a capacitor to supply power to the MOSFET output devices. The DVD-A10 has one power supply for its digital/control/display circuitry and another (featuring an R-core transformer) for the audio circuits to avoid noise contamination.

And, finally, there are built-in Dolby Digital and DTS decoders, if home theater’s your bag, man.

Setup and System

I took the same care in setting up the DVD-A10 as I would in preparing any component for review. I popped the player on a Black Diamond Racing The Shelf, supported on the top shelf of a PolyCrystal stand with a trio of Black Diamond Racing Pyramid Cones and Those Things squares. I even plunked a

Measurements

analog output actually mutes when the player detects this unique signal. The top two traces in fig.3 were generated using a -1LSB DC signal; *ie*, the same signal as “digital black,” but offset in the negative direction by one least significant bit. The DVD-A10 has lifted the mute, which raises the noise floor by 15dB. The ultrasonic noise peak between 100kHz and 200kHz reveals the use of a delta-sigma noise-shaping DAC topology. The presence of a similar noise peak with what must be a muted condition is puzzling, however.

Fig.4 reveals that the DAC has good linearity, any error remaining below 3dB to below -115dB. As a result, the Technics’ reproduction of an undithered 16-bit sinewave at -90.31dBFS (fig.5)

was excellent, if not quite up to the standard set by the best CD players — or by the expensive Sony and Marantz SACD players, for that matter.

Fig.6 shows an FFT-derived spectrum of the player’s output while decoding CD data representing a 61Hz tone at 0dBFS. The noise floor is very low in level, while the only harmonic component that can be seen is the third, at 183Hz. At -96dB (0.005%), this is inconsequential. Dropping the load impedance to a punishing 600 ohms didn’t raise the third harmonic, but some higher-order odd harmonics now made an appearance at the -100dB level. Again, this will have no subjective consequences, and implies that the Technics DVD-A10 has a beefy output stage.

It was only when I tested the ‘A10’s high-frequency intermodulation that I came across some anomalous behavior. Fig.7 shows the spectrum of the player’s analog output while decoding 44.1kHz data from a CD representing an equal mix of 19kHz and 20kHz tones, each at -6dBFS. (The waveform of the combined tone reaches 0dBFS.) The 1kHz difference tone is very low, below -100dB, again implying the presence of an unflappable output stage. But look at the rise in the noise floor above 14kHz, which suggests a problem somewhere with this demanding signal, perhaps with the Re-Mastering DSP algorithm.

I repeated the test with other high-level combinations of high-frequency

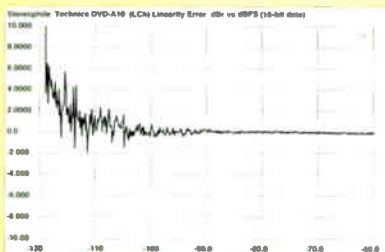


Fig.4 Technics DVD-A10, left-channel departure from linearity, 16-bit data (2dB/vertical div.).

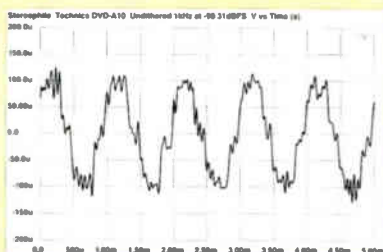


Fig.5 Technics DVD-A10, waveform of undithered 1kHz sinewave at -90.31dBFS, 16-bit data.

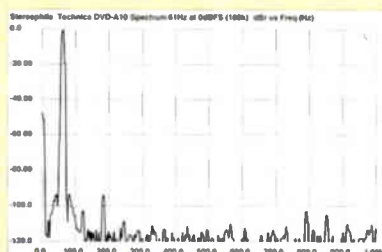


Fig.6 Technics DVD-A10, spectrum of 61Hz sinewave, DC-1kHz, at 0dBFS into 100k ohms (linear frequency scale).

Shakti Stone atop the A10 to eliminate the small resonance I got with the ol' knuckle-rap test.

I took care in routing interconnects to the preamplifier: Cardas Neutral Reference ultimately did the trick, and at an appropriate price point too. I plugged the A10 into a PS Audio P300 Power Plant AC conditioner and also listened to it straight into the wall. Having used the Mark Levinson No.32 Reference and the ARC Reference 2 preamplifiers, and pairs of the Krell 350 and Linn Klimax 500 monoblocks, plus the exotic Cary CA1D-1610 monos, I'd say I took the A10's true performance measure. I also compared it to probably the best extant 16/44.1 throughput—the Linn CD12—as well as the Accuphase DP-100/DC-101 SACD/CD transport and upsampling DAC with SACD decoding, which has replaced the single-box DP-75V upsampler in our system. (The dCS upsampling gear was in Jolly Olde getting an upgrade.)

In my view, comparing the DVD-A10 with such high-priced front-ends is

justified: SACD and DVD-Audio are being hyped as the high-resolution formats of the future. I've already made my feelings about SACD abundantly clear: I love it. For existing 16/44.1 media, however, I still prefer upsampling, especially as dCS and Accuphase do it. Because DVD-A is the format that would be king, I think it should be held up to the same scrutiny as the system it would dethrone.

Although I had only *one* "official" Warner Music sampler and one "unofficial" sampler, I also had a number of Chesky 24/96 recordings in both CD and Super Audio Disc (DVD-V) versions, plus a few Classic Records DADs (DVD-Vs). Those recordings I had in both CD and 24/96 DVD formats included: Dave's True Story, *Sex Without Bodies* (Chesky JD164/CHDVD174); Sara K., *Hobo* (Chesky JD155/CHDVD177); Sara K., *No Cover* (Chesky JD185/CHDVD195); The John Basile Quartet, *The Desmond Project* (Chesky JD156/CHDVD178); Chuck Mangione, *The Feeling's Back*

(Chesky JD184/CHDVD194); Red Rodney, *1957* (Prevue/Classic CD PR 5/DAD 1003); and Art Davis, *A Time Remembered* (Jazz Planet/Classic JPCD4001/DAD-1001).

CD Sound

After more than a week in repeat mode, the DVD-A10 was nice 'n' toasty 'n' ready to go. (When idle, the unit powers down to Standby to save energy.) I started listening to a lot of familiar "Red Book" CDs on the Linn and the Accuphase, then flipped the discs into the DVD-A10.

On most 16/44.1 recordings, in the default Re-Master mode (upsampling to 24/88.2k), the DVD-A10 sounded like a pleasant, smooth, inoffensive \$1k CD player. Re-Mastering produced a pleasant aura around the music, especially in the midrange, that could be quite attractive. It smoothed off the rough edges of everything comin' in the door—very nice, if perhaps a bit over-polite, bland, and uninspiring. This was almost too much of a good thing with the latest of the already mucho analog-sounding JVC XRC12 jazz releases I've been enjoying lately. You want "big," color-laden mono with mesmerizing, head-nodding drive and rhythm? The *Ray Bryant Trio* (JVC VICJ-60212) has it. Unhappily, it sounded almost boring on the A10: no rhythmic drive.

The DVD-A10 also had a tendency to slightly shrink the soundstage with most 16/44.1 CDs, producing a noticeably more opaque acoustic. The 'stage was also placed more forward and was not as deep as what the other digital front-ends produced, but had good if not outstanding focus. The sense of air and separation was somewhat lacking as well. I felt, in fact, a certain lack of excitement listening to CDs—no get-up-and-boogie, no lean-into-it pace and timing. I really missed the speed and transparency. Listening to "Run On," from Moby's *Play* (V2 63881-27049-2), the bass was prodigious and went impressively deep, but was nevertheless a tad diffuse, woolly, and slightly out of focus.

There was also a band of forwardness and grain in the upper midrange/lower treble that proved endemic to the DVD-A10's sound. This slight lift and grain in the presence region, subjectively shelving back to the high frequencies above, gave Moby's voice a slightly shouty quality at mid to high volume levels. Female vocals suffered the same fate, and sounded perhaps a bit worse.

tones—11kHz+12kHz, 14+15kHz—and the noise floor remained low through the top octave. I then used a mix of 19kHz and 20kHz tones from a different test CD and again got the

anomalous rise in the noise floor. However, to my surprise, when I repeated the test using the 48kHz or 96kHz sample-rate test signals on the Chesky DVD-V (fig.8), the spectrum revealed no top-octave problems. I can only assume that some aspect of the player's DVD engine, again most probably the Re-Master algorithm, is optimized for the 48kHz and 96kHz sample rates it will encounter on DVD-Audio discs, rather than the legacy 44.1kHz sample rate used on CDs.

Another puzzle: When I checked the DVD-A10's S/PDIF digital output using the analytical capabilities of the dCS 972 digital/digital converter, the 96kHz tracks on the "official" DVD-A sampler disc were downsampled to 48kHz and truncated to 16 bits, as required by the DVD Forum. However, when I played 24/96 Chesky or Classic Records DVD-Vs, the player's digital jack output a 96kHz datastream with a full 24 bits of resolution. This suggests that the DVD Forum's restrictions on digital output bit depth and sample rate are implemented as instructions contained on the discs, not the players.

—John Atkinson

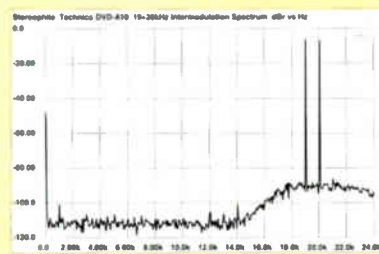


Fig.7 Technics DVD-A10, HF intermodulation spectrum, DC-22kHz, 19+20kHz at 0dBFS into 100k ohms, 44.1kHz sample-rate data (linear frequency scale).

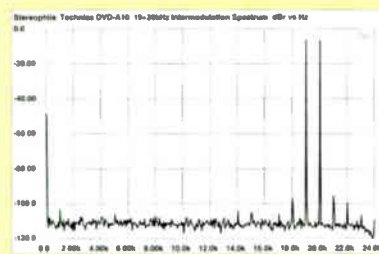


Fig.8 Technics DVD-A10, HF intermodulation spectrum, DC-22kHz, 19+20kHz at 0dBFS into 100k ohms, 96kHz sample-rate data (linear frequency scale).

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Given all that, CD reproduction was... *good*. It just didn't move me very much.

DVD-Audio Sound

When I switched to the Warners DVD-A sampler that customers get with the player, things changed dramatically. *But...* keep in mind that *all* tracks on both samplers varied widely as to sampling rate and bit depth. Most of sampler 1 was recorded at 24-bits/96kHz, but there are three 48kHz tracks and one 44.1, all at 24 bits. All the tracks on this sampler are six-channel and are automatically mixed down to two-channel by the DVD-A10 according to what's called "meta content" on the disc. (The six original channels are available at the 5.1 analog output jacks.) Technics calls this feature Smart Content, although it wasn't mentioned in any of the documentation.

Just to make it interesting, the in-house sampler I was supplied contained 5.1-channel tracks at 20/96, as well as six-channel 16/48 and two-channel 24/192 tracks! With all the multi-channel tracks on the second sampler, "CANNOT DOWN-MIX" scrolled urgently across the DVD-A10's display, because the mixdown meta content had not been mastered on the disc. With this recording I was listening to just the L/R front-channel information rather than a two-channel mixdown. Just to *kick it up a notch*, [BAM!] I had a Denon Ambience DVD-Video Sampler (DEG-02001) and could switch between a linear-PCM two-channel mix and a Dolby Digital surround version of Beethoven's *Egmont* overture, plus his "Eroica" symphony and 30 minutes of Chopin.

With this many variables to comment on, I'd just as soon make a spreadsheet and plot sound quality against resolution! But I *was* able draw some general conclusions. Everything at 88.2kHz and above coming in on a video disc was throughput at its original high resolution with no sidesteps to the Re-Mastering module. In most cases, higher-resolution material rendered a larger and more transparent soundstage, better bass, a more detailed midrange, and more extended highs. The higher the speed, the better things sounded; no question.

A 20-bit word depth sounded much better than 16 bits, but the jump from 20 to 24 bits wasn't that dramatic. There were a few other surprises in the lay of the data points: Handel's Concerto for Harp and Strings, Op.4 No.6, at 16/48 six-channel (a Japanese ensem-

ble on the unofficial sampler) sounded *wonderful*, as did another 16/48 track on this disc. But, as you might also expect, the 24/192 two-channel tracks sounded by far the best, and quite significantly so. Everything at 48kHz and below sounded pleasant if not terribly detailed, but when shifting into high gear at 88.2kHz and above, the resolution became transparent enough to hear the warts in the recording, and even perhaps the limitations of the

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hardware. And it sounded more liquid, as did all the high-resolution formats.

Track 1 of the "official" sampler is the Jazz at the Movies Band (uh-oh) doing (to death) "Farewell My Lovely." A 24/96 six-channel mixdown, my notes read, "and don't let the door hit'cha on the way out!" The music was hackneyed, but I perked up at the bur-nish in the horn section: very soaring and attractive.

Track 2 featured Natalie Merchant, an artist I respect more than love. She was quite nicely rendered, though with some bloat in the upper-midrange/lower-treble that made her sound positively epiglottal! Swollen glands, I reckoned. Still, there was a welcome smoothness in her voice, even if the recording wasn't the most transparent I'd ever heard.

Track 4, Miles Davis' horn on "Tutu" sounded nicely burnished and the soundstage was *somewhat* ambient, with satisfyingly tight bass and a nice midrange. The cut featured those piercing highs with which Miles' later recordings were afflicted, but around 2:20, when the backing vocals come in, it all sounded very smooth, attractive, and midrangey. Again, it was 24/96's midband liquidity that was most immediately noticeable.

I wound up preferring the overall sound of track 11's 24/48 recording of Béla Fleck's "Katmandu" more than the 24/96 material! But don't forget —

every track on the sampler is a Smart Content multichannel mixdown. In any case, massed strings sounded pretty good on works by Chabrier and Strauss, but that's about as enthusiastic as I got.

The second sampler, which mainly featured Japanese ensembles, sounded significantly better, and, interestingly, none of the selections on this disc were mixed down to two-channel. The first movement of Dvorák's Symphony 9 is a 20/96 five-channel recording, which, according to my notes, "sounds damn good, a lot of dynamic bombast for the buck." As with almost everything I heard through the DVD-A10, there was a touch of chaff and grain in the high frequencies — a bit piercing, even at this enhanced resolution. The timpani sounded stunning, though.

Track 2, Copland's *Fanfare for the Common Man*, also 20/96 five-channel, whipped up impressive dynamics and earned a "not bad" in my notes. But for a new format, "not bad" ain't great.

Track 3, Bach's Toccata and Fugue in d, was impressive, with good overall scale and fullness, but the highs were enough to kill a mockingbird at 40 paces. Considering that I was only listening to the front two channels, it was nicely ambient, with an attractive midrange and a big, impressive bottom end.

Track 4, the Handel harp concerto again — a 16/48 six-channel recording — surprised the hell out of me with its transparency, tonal color, and sheer musicality. It was positively beguiling. Could it be that the simple jump from 44.1 to 48kHz had that much of an effect on the sound? Is it all in the math? More questions than answers at this point, alas. Notes: "Just a touch less transparent than 24/96, but seemingly more extended highs, definitely more attractive upper mids and midrange, with something of a mushier bottom end than 24/96 offers. It's about the best-sounding recording I've heard on the 'A10! Well, slap me silly and call me crazy."

I can hear my Editor now: "Okay, J-10. [Whap!] You're crazy!"

Track 5, Debussy's *Clair de lune*, is a two-channel 24/192 piano recording. Notes: "Haunting and lovely, with ease, elegance, and style. *Finally* I can feel my lumpy body relax into the music, *finally* something lyrical and pastoral, a recording to wrap my mind around. High-speed sampling makes *all* the difference, although the 16/48 Handel shows how good it can be at lower sampling rates and bit depths."

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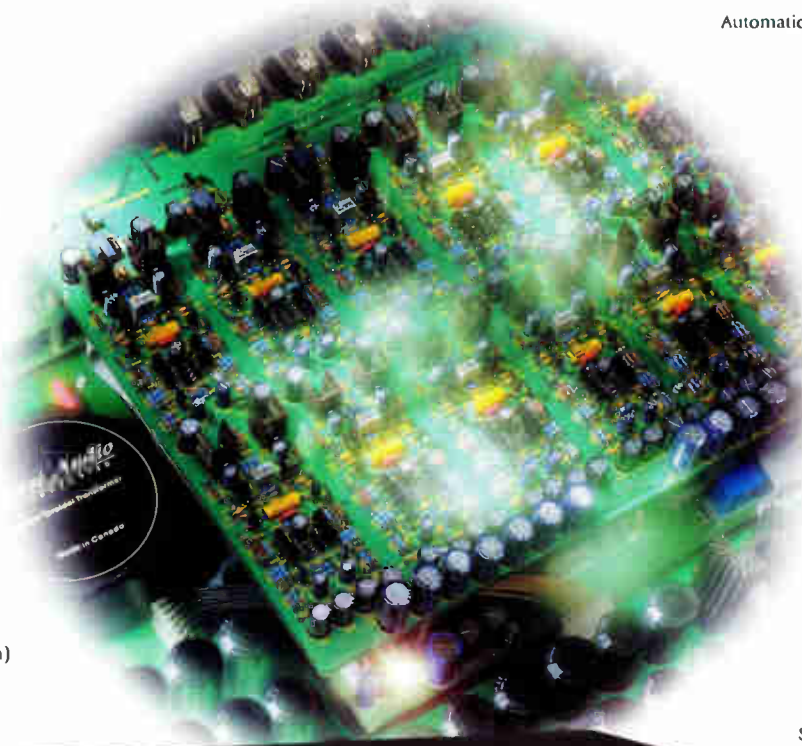
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(1 Coaxial, 1 Optical)
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Color, body, fullness, and a big soundstage—kinda like that discovery.com TV commercial with the asteroids, “Ahhhhhhhhhhhh, the atmosphere...” The recorded presentation of the piano was expressive, linear, and again—like most recordings in comparison to the Linn and Accuphase—a touch dark on top. There was an essential musical expressiveness at 24/192 that was lacking in the other, lower-rez tracks.

Notes: “We begin crossing over into really first-rate sound now. I’m finding an *attachment* to the music that other rates and bit depths don’t quite get but that 24/192 just nails. I can almost see the pianist move his hands elegantly above the keyboard—I feel like getting up and turning the page for him! And there’s a greater sense of rhythm, perhaps as a result of better leading-edge definition at this level of oversampling. Really, it’s very palpable. Even though the lower midrange is a touch bloated and the highs aren’t very sweet, the overall information level is high enough that I *feel* the music, to put it simply.” The finesse of the acoustic fadeout at

track’s end said a lot to me about DVD-Audio’s *potential* for great sound.

Track 11, “Dancin’ Cymbals,” was impressive for its transient sheen and projection of high frequencies, even though I found it a bit brassier than I’d like. This is the demo track with frequencies out to 45kHz, and it sounded amazingly fast, zingy, and open. As intended, it showcased the abilities of DVD-Audio, but lacked the *sophistication* of the more costly upsamplers like the Accuphase and the dCS.

DVD-Video sound

While the two sampler discs demonstrated the *potential* of DVD-Audio, the 24/96 recordings from Classic and Frères Chesky delivered the musical goods in the here and now, producing a familiar, *unmanipulated* two-channel sound that I related to more easily. But before I tell you what I liked about them, I’ll tell you about a weakness they revealed.

I popped Dave’s True Story’s *Sex Without Bodies* into the DVD-A10 and cued up one of my favorites, “Daddy-O,” followed by Kelly Flint’s and David Cantor’s cover of Lou Reed’s “Walk on the Wild Side.” Now I know this recording *real* well—Kathleen and I were at the St. Peter’s recording session. In fact, Flint had a tickle in her throat, soothed by one of those high-end Japanese Gummy Bears we scoop up by the bagful at Sunshine Market at St. Marks and Third. It was White Peach flavor; highly addictive. Hey, we even attended her wedding! Well, sort of. The former Miss Flint married bassist Darren Solomon on stage, during a performance at Club Fez, under the Time Café on Lafayette St. (The minister was more nervous than Kelly or her betrothed!)

Chesky’s 24/96 Super Audio Discs are DVD-Vs mastered in the 24/96 format they’re to be played in. And I know the 16/44.1 CD version of this recording *intimately*. *Sex without bodies*, after all. The DVD-A10 always produced a light gray scrim that separated me slightly from the sound, good though it was in so many other ways. Imaging and focus, for example, were once again “good”: adequate, but not great. This was closely associated with a certain dryness of sound—the trailing edges of acoustic information from the midrange up attenuated more quickly than I thought natural, pulling the sound back into the speakers. So that’s a characteristic of the player and not the technology.

Two-channel DVD-A recordings at 24/192 exhibited the least darkness, 24/96 DVD-Vs had it a few molecules more deep, and Re-Mastered CDs and 48kHz DVDs, while smooth ‘n’ sorta sexy, proved the most deeply shadowed.

Closing my eyes and listening to Kelly Flint’s take on “Walk on the Wild Side” proved darkly delicious and resonant, her voice full of knowing—as good as it got on the DVD-

I’m finding an *attachment* to the music that other rates and bit depths don’t quite get but that 24/192 just nails. . . . Really, it’s very palpable.

A10, hands down. Interestingly, the soundstages on the two-channel 24/96 recordings were bigger than what I’d heard from two-channel 24/192 recordings on the sampler. Not the same tracks, but this seemed common to all the DVD-Videos: big ‘n’ cushy in the soundstage, wider, not incredibly deep, but nicely ambient if not totally transparent. There was an engaging openness in the upper mids, a slight and welcome warmth just below that band of grain, with an extended if not very sweet treble. The bass was quite good, starting to fall apart only at very high levels.

Sex Without Bodies actually sounded smoother and more liquid in the midrange with the DVD-A10 Re-Mastering the 16/44.1 CD! It was more “white” in the upper-midrange, shelving up to what seemed like a more metallic, slightly grainy upper treble. Skipping back to 24/96 returned upsampling’s welcome ease of presentation. In that way the Chesky SACDs and the Classic 24/96 DADs were always impressively musical, if still somewhat confused and grainy in the transition between upper midrange and lower treble.

I mentioned the Denon sampler and its *two* audio-data channels: Dolby Digital 5.1 and linear PCM stereo. Love Beethoven’s *Égmont*—so romantic. Well, no surprise: I preferred the two-channel PCM version, but *neither* sounded very good in the highs. Massed strings were hard and faintly

Associated Equipment

Digital source: Linn CD12 CD player, Accuphase DP-100/DC-101 SACD 24-bit/192kHz transport/DAC.

Preamplifiers: Audio Research Reference Two, Mark Levinson No.32 Reference.

Power amplifiers: Krell FPB350Mc, Cary CAD-1610-SE, Linn Klimax Solo 500 (all mono-blocks).

Loudspeakers: JMLab Utopia.

Cables: Digital: XLO The Limited. Interconnects: Cardas Neutral Reference and Golden Reference, Synergistic Research Designer’s Reference, TARA The One/Air One. Speaker: TARA The One, Cardas Golden Cross, XLO The Limited. AC: Synergistic Research Designer’s Reference Master Coupler Squared.

Accessories: ASC Studio Traps, Argent RoomLenses, Audio Power Ultra Enhancers, PS Audio P300 Power Plant, Signal Guard platforms, Black Diamond Racing shelves and cones, Bright Star Air Mass and Big Rock combo, Poly-Crystal amp stand, equipment racks, cones, and cable towers.

—Jonathan Scull

You have the equipment, now put up your feet and listen to *Stereophile* recordings!

Bravo!

John Atkinson's fourth recording of the Santa Fe Chamber Music Festival, featuring noted violinist Pinchas Zukerman with longtime collaborator Marc Neikrug on piano, along with soprano Heidi Grant Murphy and the Kalichstein-Laredo-Robinson Trio. Delight in Elgar's symphonic-scaled Piano Quintet and Mozart's demonic G minor Piano Quartet. 20-bit multitrack recording preserves the whole sonic experience. \$16.95

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unpleasant. While I was playing them, K-10 walked across our loft and made a face as she passed the Ribbon Chair. A picture's worth a thousand words, they say...

The Art Davis DAD from Classic is very fine-sounding too. But it's slightly dry, even though sourced from an old, "wet"-sounding analog master. The tail of the acoustic envelope winked out rather quickly, and probably added to the slightly gray cast of the DVD-A10's sound. Re-Master was smooth and slightly obscuring, but these two-channel 24/96 recordings allowed me to hear far more deeply into the recording and "see" problems in the recording chain and elsewhere. Nuttin's free, ya know.

Another stunner in the musicality department of 24/96 DVD-V recordings was Classic's *thoroughly* enjoyable reissue of the Jimmy Rushing All Stars' *Gee Baby, Ain't I Good to You* (DAD 1005). Track 2, "Mr. Blues," was just killer in every way. We're talking early stereo master here — but if you have any objection to *that*, you're reading the wrong magazine! My notes: "Still piercing at high volume levels and a little ragged when

pegging the input meters." There's nothing wrong with the recording, as I confirmed by playing the CD version in the Linn and Accuphase.

Don't forget—all of this is without watermarking. If DVD-Audio's highs are a little questionable now, *without* watermarking, what will they sound

The balance of sound the DVD-A10 makes is well chosen for its intended purpose, given its price and other capabilities.

like *with* it? I shudder to think. (Our own JA, in his September "As We See It," called for a boycott of all watermarked recordings.)

What's it all about?

I was a little disappointed in the sound of the Technics DVD-A10, but, after

all, it is a \$1200 player. Maybe the addition of three more channels will make DVD-Audio bear musical fruit. I dunno... I doubt many audiophiles will suddenly start adding speakers willy-nilly to their carefully set-up two-channel systems on the basis of this player. But the future of audio is certainly multichannel, they say, and we'll see how this Technics' sound quality translates to the multichannel experience in a future issue.

Still, the balance of sound the DVD-A10 makes in two-channel mode *is* well chosen for its intended purpose, given its price and other capabilities. In fact, what I'm left with is a sense of DVD-Audio's potential — properly implemented, it could rock our audio world in a big way. In my opinion, that potential has not yet been reached. With Sony and Marantz supporting the Super Audio CD launch with true high-end audio hardware, SACD just wipes DVD-A's clock in *every* important performance parameter.

When you power the DVD-A10 down, its display reads "BYE," then "OFF," then fades slowly out. But I suspect it's not goodbye, just adieu. **S**

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Stereo Review, June 1998
Tom Nousaine

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Hovland HP-100 stereo preamplifier



Hovland HP-100 stereo preamplifier

There's a whorish aspect to reviewing that some readers and industry critics never tire of mentioning, as if they've stumbled onto some great revelation: that we writers seem

to flit from new product to new product, sometimes gushing like cracked fire hydrants over one amplifier one month, only to gush over another amp the following month.

While the goal of most consumers is to find one true love of a component and stick with it for a long time, our job is to wolf-whistle or blow raspberries at the endless passing parade. It's the reviewer's job to try to remain dispassionate. However, no reviewer can listen to *everything* available before writing a review—a reviewer is only as “all-knowing” as the last product he or she has reviewed. I've just evaluated Audio Research's superb-sounding Reference Two line stage (\$9995, September 2000). Before that, I reviewed ARC's mouthwatering Reference phono stage (\$6495, February 2000). Now along comes Hovland's HP-100, a one-box, all-tube line stage (\$4995) with optional built-in MM (\$5995) or MC (\$6495) phono stage. I'm backing into this review slowly so I don't crack a fire hydrant.

Caps, Cables . . . and a Preamp?

Hovland is best known for its proprietary film and foil polypropylene Musi-Cap® capacitors, which the company began distributing in 1991, and which more than 200 audio companies around the world now use; and for its custom tonearm, interconnect, and speaker cables, which go back to 1979. But company spokesperson Alex Crespi assured me that those products came out of research conducted by Robert Hovland and his associates while they were attempting to design tube and solid-state preamplifiers and amplifiers, projects that date back to the late '70s. At the time, Hovland's business was mainly

Description: Vacuum-tube full-function preamplifier with built-in phono stage and optional MC step-up transformer module. Line-stage tube complement: two 12AX7s, one 12AU7. Phono stage tube complement: two 12AX7s, one 12AT7. **Line-stage:** Voltage gain: 14dB. Frequency response: 10Hz–25kHz, +0/–0.25dB. S/N Ratio: 80dB (wideband) ref. 3V out, (with level control fully clockwise). THD: <1% at rated output. Output impedance: approximately 2500 ohms.

Input impedance: 100k ohms. **MC phono stage:** Voltage gain: 66dB at 1kHz. Frequency response: 25Hz–25kHz, ±0.15dB. S/N Ratio: 60dB (wideband) ref. 0.2mV input signal, 75dB ref. 0.2mV input using 400Hz high-pass filter. Input impedance: 450 ohms.

Dimensions: 18¼" W by 5¼" H (including feet) by 17⅜" D (including knobs and rear jacks). Weight: 27 lbs. **Serial number of unit reviewed:** 1048.

Prices: \$4995 (line stage only). With phono stages: \$5995 with MM, \$6495 with MC (this version reviewed). Internal 20dB step-up transformer module for MM stage: \$695. Warranty: 2 years, parts & labor; tubes, 90 days. Approximate number of dealers: 15.

Manufacturer: Hovland Company, 1545A Pontius Avenue, Los Angeles, CA 90025. Tel: (209) 966-4377. Fax: (209) 966-4632. Web: www.hovlandcompany.com.

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John Atkinson Stereophile
Volume 23, Number 5, May 2000

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So while the HP-100 is Hovland's first publicly traded audio component, it is not an afterthought, or even a natural extension of the cable and capacitor business, but the fulfillment of what's been Robert Hovland's goal all along: to bring such a product to the market. Or so I was told. It's just taken "... some time to get it all right." Given the company's history of more than 20 years, that sounds like an understatement.

When I expressed my skepticism about the 20-year gap between inspiration and fruition, I was told to visualize Apple's "core team" working in a garage for 20 years and coming up with the G4 as its first product. But no sooner had Crespi and the rest of the

tightknit group — Robert Hovland, CEO Jeffrey Tonkin, and design consultant Michael Garges (listening in via speakerphone) — unleashed that analogy on me, than they all chimed in almost simultaneously to assure me that Hovland is *not* a garage-based company, and *not* some hobby run amok!

Out-of-Box Experience

With its three smooth, gleaming, chrome-plated knobs and $\frac{3}{8}$ "-thick faceplate of aluminum plated in black nickel (the same plating process used for the sinks on the Sultan of Brunei's jets) and backed by a sheet of translucent plastic that's softly backlit blue, the HP-100 exudes tasteful luxury and authoritative simplicity. More important, the heavy-gauge, polished, ano-

dized top and bottom plates and mono-coque chassis help ensure structural integrity. The stiff, heavy box feels as good as it looks, though those of conservative tastes might find it a bit Rodeo-Drive garish. If you don't like the blue glow, you can turn it off via a switch on the rear. Mikey liked it.

Under the lid are three distinct compartments: one each for the optional three-tube phono section, the three-tube line stage, and the solid-state power supply, with cabling neatly routed in between. Mounted on the chassis rear to keep signal paths short is a complex switch, meticulously hand-soldered, for selecting among eight sources. On the faceplate is a stepped attenuator switch, also hand-soldered, that is wondrous to behold. The quality of the workmanship

Measurements

The drop-dead gorgeous Hovland HP-100 preamp offered a maximum line-stage gain of 13.6dB — the silky-feeling switched attenuator operating in accurate 2dB steps down to -58dB, with then a step to a full mute. (There's also a separate Mute button.) The volume control didn't have an exact unity-gain setting; the nearest was the 3 o'clock position, which featured a 0.135dB insertion loss. The 12 o'clock position was equivalent to -14dB referred to the "unity gain" setting.

The Hovland's line stage didn't invert absolute polarity. Its input impedance was a usefully high 100k ohms in the midrange and bass, with just a small reduction to a still-high 86k ohms at 20kHz. Despite the claim that the HP-100 uses a cathode follower output stage, its source impedance was high at 2.4k ohms, rising to 4.3k ohms at 20Hz. The partnering power amplifier would best have an input impedance of at least 47k ohms if the bass is not to sound lean.

Line-stage frequency response (fig.1) was flat within the audioband, rolling off above 10kHz to reach a probably negligible -0.25dB at 20kHz and -3dB at 80kHz. The response did not change at different volume-control settings. The HP-100's channel separation (fig.2) was disappointing: While good at low frequencies (78dB L-R, 73dB R-L), it degraded at 6dB/octave throughout the midrange and treble to a merely adequate 45dB (L-R) and 37dB (R-L) at 20kHz. This is presumably due to capacitive coupling

between channels, perhaps due to a twin-triode tube shared between channels at or ahead of the volume control. I suspect the latter as the channel separation did change with the volume-control setting.

Mikey said he felt the Hovland was not the quietest preamp around. Line-stage noise was only okay at -71.5dB, unweighted ref. 1V. The S/N ratio improved to 95.1dB when A-weighted, suggesting that the noise is mainly high- or low-frequency in nature. Fig.3 shows the line stage's THD+noise percentage, plotted against frequency at 750mV output into 100k ohms. The true distortion is buried within the noise below 10kHz; there is a rise in harmonic content above that frequency, but as it reaches just 0.1% above 30kHz, it is probably subjectively inconsequential, particularly as the primary distortion component is the second, at twice the frequency (fig.4).

This graph was taken into the kind 100k ohms load. Reducing the load to

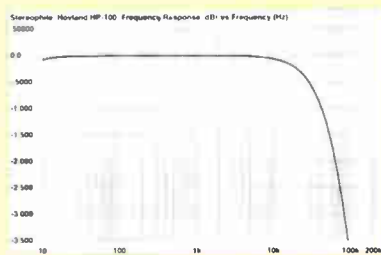


Fig.1 Hovland HP-100, line-stage frequency response at 1V output with volume control at maximum gain into 100k ohms (right channel dashed, 0.5dB/vertical div.).

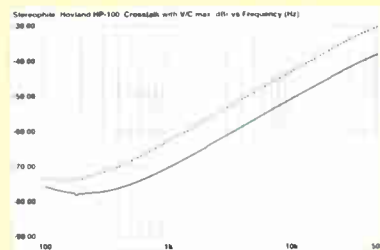


Fig.2 Hovland HP-100, line-stage channel separation with volume control at maximum, R-L dashed, L-R solid (10dB/vertical div.).

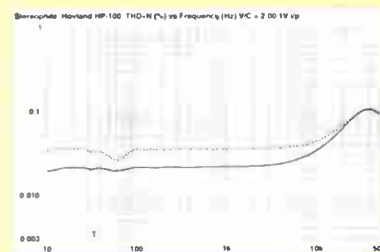


Fig.3 Hovland HP-100, line-stage THD+N (%) vs frequency at 750mV into 100k ohms (right channel dashed).

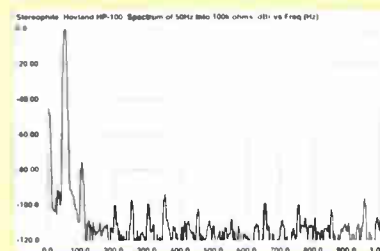


Fig.4 Hovland HP-100, line-stage spectrum of 50Hz sinewave, DC-1kHz, at 2V into 100k ohms (linear frequency scale).

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on these hand-built parts is gorgeous.

I gazed admiringly at the HP-100's innards. Instead of spending the development years tacking on circuits in an effort to improve the sound, the Hovland design team clearly devoted itself to carving away superfluous clutter, just as an editor removes words to clean up copy. The layout looks so clean and simple. But, of course, looks can be deceiving. What goes on under the HP-100's hood is anything but.

Hovland says they chose a solid-state power supply for greater reliability, contending that tube rectifiers deteriorate sonically in a slow, insidious way. The HP-100's power supply doesn't rely on brute force, using only "modest filtering" via high-quality, specially built capacitors. The custom transformer is

non-toroidal but features an oversized core for low heat production and low magnetic radiation. Nonetheless, it's positioned far away from the high-gain stage, as well as being separated from it by two internal metal walls.

The HP-100 uses glass epoxy boards mounted in secure but not rigid grommets of shock-absorbing urethane. Hovland tried spring dampers, but they seemed to detract from the sound. Parts quality is high: MusiCaps (duh!) are used throughout, along with Cad-dock and Holco resistors. Cabling is Hovland Generation 3 shielded silver interconnect. The hard-gold-plated RCA jacks are chassis-mounted, with collet-type pin sockets.

The 31-position (2dB steps), custom-made, low-mass, coin-silver-contact

stereo volume control is configured as a series attenuator instead of the more conventional shunt configuration: the source sees a constant input impedance and the listener is "... not forced to listen through high-value resistors" at certain levels. The silver-contact input selector features "contact break before make," so two devices never "see" each other during the switching process. Unused inputs are not shorted, which means there might be slight bursts of hum and noise when switching between sources. Through listening tests, Hovland determined that the HP-100 sounded better this way.

Hovland is big on using long interconnects from preamp to amp and short speaker cables, so the line-stage output features a cathode-follower

Measurements

10k ohms, a typical input impedance for many solid-state power amplifiers (fig.5), increased the second harmonic almost tenfold, to -60dB (0.1%), and added some third harmonic. Dropping the load to the admittedly punishing 600 ohms raised the second harmonic to -44dB (0.6%, not shown). It is probably inadvisable to use the Hovland with those few power amplifiers that have input impedances below 10k ohms.

This is reinforced by fig.6, which shows how the HP-100's THD+N per-

centage varies with output level. Into 100k ohms (bottom trace), the distortion at the 2V output level—which will drive most power amplifiers to their clipping points—is at or below 0.05%, and the preamp's output stage doesn't clip (defined as 1% THD+N) until 9.5V RMS, well above any level the preamp will be asked to deliver. But into 600 ohms (top trace), the distortion is almost 10 times higher at 2V, and only 4.2V is available at clipping.

The phono stage featured an input impedance of 500 ohms in the mid-range and treble, dropping very slightly to 470 ohms at 20Hz. The voltage gain was a very high 72.8dB, with correspondingly low overload margins: approximately 6.8dB at 1kHz, 6dB at 20kHz, and 10.4dB at 20Hz (all figures referred to a nominal MC cartridge 1kHz output of 500 μ V, or 0.5mV). The HP-100's phono input has obviously been optimized for cartridges of very low output. With such a model's 150 μ V output at 1kHz, these margins will

improve by 10.5dB. Even so, the resultant 17.3dB overload margin at 20kHz is still on the low side, in my opinion, the subjective result being perhaps some slight emphasis of surface-noise ticks.

With the enormous phono-stage gain available, it was not surprising that the unweighted noise was disappointing at -46dB. A-weighting the measurement improved the S/N ratio to a good 62.5dB, but I suggest that only those with the very lowest-output MC cartridges have the internal 20dB step-up transformers fitted. MF noted some hum, and I found it hard to prevent the Hovland's step-up transformers from picking up radiated 60Hz from other components' power transformers.

Finally, fig.7 shows the phono stage's RIAA error. (The input impedance of 470-500 ohms is sufficiently higher than the Audio Precision System One's 25 ohm output impedance that this graph should be free from any interaction effects.) The ± 0.2 dB swayback in the Hovland's phono response will be subtly audible as extra treble resolution and a very slightly rich bass, or as a very slightly recessed midrange. The response is swiftly rolled-off above 20kHz—a sensible design decision, in my opinion.

Other than the unnecessarily high phono-stage gain which leads to the higher-than-usual noise floor and lower-than-usual overload margins, and the disappointing line-stage channel separation, the Hovland appears to be a well-crafted preamplifier. It certainly sounded fabulous in Mikey's system!

—John Atkinson

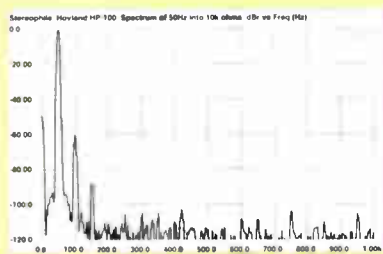


Fig.5 Hovland HP-100, line-stage spectrum of 50Hz sinewave, DC-1kHz, at 2V into 10k ohms (linear frequency scale).

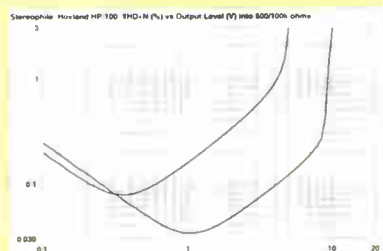


Fig.6 Hovland HP-100, line-stage THD+N (%) vs output voltage at 1kHz into 100k ohms (top above 300mV) and 600 ohms (bottom).

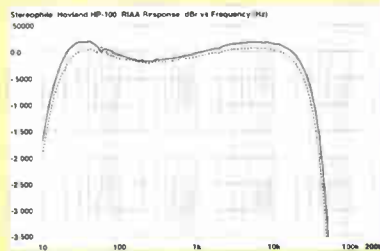


Fig.7 Hovland HP-100, phono-stage RIAA error at 1mV input (1kHz), with volume control at maximum gain into 100k ohms (right channel dashed, 0.5dB/vertical div.).

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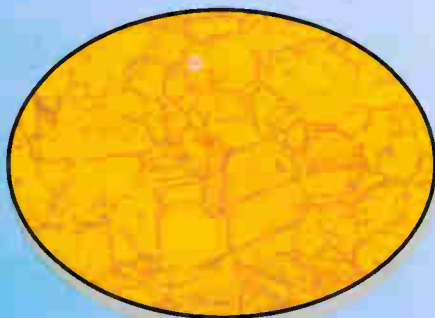
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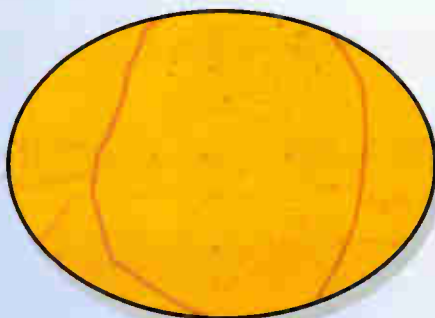
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buffer, which, I was told, reduces impedance to less than 1000 ohms. (The spec sheet claims approximately 2500 ohms.) According to Hovland, the HP-100 is “happy” with different cables, and the sound doesn’t change with cable length. Both the phono and line stage are non-inverting, and the preamp is single-ended.

While its design incorporates many custom parts, the heart of the HP-100 — the tubes — are readily available, relatively inexpensive Sovteks. (Hovland requests that you not try to improve on them with vintage tubes or other brands.) The 14dB-gain line section uses a pair of 12AX7s and one 12AU7; the 46dB moving-magnet phono section, a pair of 12AX7s and one 12AT7. Tube life is said to be 2500 hours; matched replacement sets are available from Hovland.

MM/MC phono stage

The optional phono stage — mandatory for this analog lover — is available as a dealer-installed upgrade for \$1095 (moving-magnet) and \$1695 (moving-coil). MM owners wishing to step up at a later date will have to fork over an additional \$695. Hovland says the phono circuit is “unusual, though it looks simple.” RIAA equalization is not implemented as a passive filter in series between gain stages, as is done in many phono stages. Instead, it’s applied via a “nested” feedback loop. The MM section provides 46dB of gain, which is enough for both MM and some medium- to high-output MC cartridges. Most phono enthusiasts will probably opt for the MC version: it includes a built-in step-up transformer, also available as a dealer-installed upgrade.

You’re precluded from using an MM cartridge once the step-up is installed: Hovland believes a selector switch would degrade the sound. If you use both kinds of cartridges, the solution is to add an outboard MM phono section of your choice into an Aux input. Incidentally, instead of a 47k ohm input impedance, the MM stage is “loaded” at 1 megohm — almost no load at all — but Hovland feels the sound is better this way. After all, 47k ohm is an arbitrary standard. *[I believe the standard 47k load impedance was chosen to work best with the relatively high inductance and source impedance of typical MM cartridges, though the various Shure V15s, if I remember correctly, needed 68k ohms. — Ed.]*

The step-up transformer is built for Hovland to their specifications. It features copper wire, using, according to

Hovland, “unique winding technologies” whose creation required many worker-hours of investigation into transformer design. The final approach yields a high degree of consistency in sound from unit to unit, according to the company. The step-up adds 20dB of gain, or 10 times voltage, for a total of 66dB of gain (including the MM section’s 46dB), which should be enough for any MC cartridge. If your MC cartridge’s output is up near 900 μ V, you won’t need or want the step-up transformer option.

**I have never heard such
a fireworks-like display
of high-frequency
resolution and transient
detail, accomplished
without any grain,
brightness, or edginess.**

The load the cartridge sees with the MC step-up is around 450 ohms (similar to AR’s Reference Phono stage MC input), which Hovland finds works well with most MC cartridges. Should you wish to load down further, there are provisions for adding resistors, but Hovland feels that most modern MCs don’t need them.

Let’s Play!

Its design is “minimalist” and it lacks remote control, but otherwise the HP-100 is a full-featured preamp. There are a generous eight inputs, plus a tape loop and two sets of main outputs. The preamp includes a Mono button (a must-have for any lover of monophonic LPs), Mute, and a \pm 5dB switched silver-contact attenuator balance control (it’s out of the circuit in its centered position). The balance control is there just to touch up the soundstage in an acoustically unbalanced room.

While there are two inputs labeled “CD,” Hovland suggests using the tape loop for the purest sound, as it bypasses the selector switch. I tried it both ways, and the selector switch is very close to transparent; if you need a tape loop, you won’t be giving up much, if anything, by going into a CD input.

I think everyone will love the feel of the knobs as they click the volume up and down, select a source, or go to Mute or Mono. The Hovland feels good!

And It Sounds Even Better!

Tube sound? Not here — unless by “tube” you mean luxurious liquidity, sensuous liquidity, wrap-around-your-eardrums liquidity, all accomplished seemingly without politeness, sluggishness, or high-frequency rolloff. When I first played a favorite recording through the HP-100, the first thing I heard was that liquidity — but accompanied by seemingly limitless high-frequency extension, supple and airy delicacy, and previously unheard-of transient resolution.

Unheard of by *me* — I can’t speak for you. It was as if the ether had increased in pixel density. I almost wrote “ether had softened,” but “soft” is not the word for the top end of this groundbreaking design. It was surprisingly fast, and could come up with the grit when grit was in the signal.

I have never heard such a fireworks-like display of high-frequency resolution and transient detail, accomplished without any grain, brightness, or edginess — yet the highs had a melt-in-my-ears delicacy, transparency, and harmonic completeness. This thing killed me right out of the box — and then warmed up and got even better. I didn’t have to mull over my conclusions, and you probably won’t either — whether or not it meets your needs, you’ll know you’re in the presence of a major sonic accomplishment.

The HP-100 served the ebb and flow of music with greater grace than any tube or solid-state preamp I’ve heard. It breathed music with a rare effortlessness, perfectly balancing tube warmth and solid-state clarity while moving dynamically up and down the scale in both large and small steps with exceptional continuity and cohesiveness. Its incredible top-end performance gave me more confidence than ever about comparing various pressings, so I pulled out (among other things) an original six-eye Columbia LP of Miles Davis’ *Kind of Blue*, along with the vinyl reissues by Classic Records and Absolute Analogue.

Though I’ve heard it hundreds of times, the original pressing was a real shocker. The HP-100’s microdynamic delivery of Paul Chambers’ soft opening bass line on “So What” revealed it with a clarity, focus, and natural dexterity I’d not experienced before. The preamp gripped the bass with authority, but never so tightly that the delicate first touches of fingers on strings hardened or got “one-notey.” And when Chambers really got going, the HP-100 responded with equal control. Tight

bass from a tube preamp? Yes. Perhaps not quite as taut and punchy as my reference Ayre K-1x, but, overall, more realistic and complex—especially at ultra-low levels, where bass clarity and focus surpassed those of every other preamp I've auditioned.

I got another shock when Davis himself entered. I've never heard such a complex portrayal of his horn—tonally, spatially, and physically. The muted bite of his sound on that track tore through the air in ways that other preamps simply gloss over. The HP-100 seemed to be able to dig out and reveal tiny vibrational peaks and valleys where other preamps deliver flat lines. And it did so three-dimensionally, without etch, grain, or spotlighting. As the track played through and I continued to hear so much that was different and better, I kept saying to myself, over and over, "This is what high-end audio is all about! This isn't a new flavor, it's a whole new *dish!*"

The Classic reissue was quieter, perhaps more dynamic, and did a very good job of conveying the original's message, but there was more of the outline and less of the fill. It's a fact of life: 40-year-old tapes lose highs. Still, if you can't find an original pressing, the Classic does the music and the recording justice. The Absolute Analogue version just glared, and the secondhand source (they used the original UK production master) was painfully apparent.

And the Hovland could rock. Its speed, transparency, bass control, and treble extension delivered electric music with satisfying realism: plenty of bite to cymbal splashes, lots of punch to electric

bass. It wasn't at all polite, plummy, over-ripe, or soft, though the liquidity sometimes gave the sound a bit too much "finesse." Still, I never felt my fingers wandering toward the acoustic, jazz, or classical shelves because that's what sounded better through the HP-100.

This preamp gave me a greater sensation of "you are there" from vinyl than any other preamp I've auditioned.

What the Hovland did well—almost everything—served every kind of music equally. I pulled out stuff like Neil Young's *After the Gold Rush* (ultra-rare orange-and-yellow Reprise-7Arts label) and Eno's *Another Green World* (British Polydor) and just shook my head: The HP-100 delivered the best of what my Reference Ayre K-1x does in terms of clarity and extension, and what Audio Research's Reference Two (with Reference Phono preamp) imparts tonally—but without the added plushness and richness on the bottom and the slight, subtractive politeness on top. The Hovland's tonal and spatial presentations were far more wide-open and revealing.

On a whim, I pulled out Herbert von Karajan's 1962 set of the Beethoven symphonies on DG and played Symphony 7. Oh! The strings!—an airy,

panoramic view with a convincingly natural, three-dimensional physical bite and the kind of complex tonal textures you hear live. And the images, while focused and three-dimensional, were never hard or "glazy."

Even a rock-loving cretin like me knows that Debussy was a champ at orchestral color, and to my ears, the RCA team of producer Richard Mohr and engineer Lewis Layton team hit the sonic nail on the head with *Images for Orchestra* (Charles Munch/BSO, RCA Living Stereo LSC-2282). The HP-100 delivered this set with full-flowered color and incredible delicacy and airiness. What an amazing balancing act the HP-100 pulled off! Bring on those Jascha Heifetz Living Stereos and get ready to melt.

To hear how the Hovland handled piano, I auditioned Byron Janis's recording of Tchaikovsky's Piano Concerto 1 (Herbert Menges/LSO, Mercury Living Presence); and Earl Wild doing George Gershwin's Concerto in F, *Cuban Overture*, and the "I Got Rhythm" Variations (Arthur Fiedler/Boston Pops, RCA Living Stereo; get a clean original, or Classic's 45rpm version). No surprises: In almost every way, the Hovland beat anything I've ever played those recordings through, particularly in the natural attack and decay of the piano. (Yes, I know—I've written that before about the Gershwin recording.) This preamp gave me a greater sensation of "you are there" from vinyl than any other preamp I've auditioned.

Okay. I've officially backed over the fire hydrant.

Easily Identifiable Negatives?

Sometimes I thought the Hovland's overwhelming liquidity was too much of a good thing—that there was more romance than was desirable. But those fleeting thoughts were always swept away by some other amazingly natural sonic stunt the HP-100 pulled off. Sometimes I felt as if the preamp's macrodynamic presentation was not quite as authoritative as the Ayre K-1x's or the Reference Two's, and that there was a slight compression in the middle of the dynamic spread—more a slight lack of punch there than anything else.

The Hovland may not have been quite as tightfistedly organized as the Ayre or the Audio Research, and it certainly didn't sound as lush and rich as the AR, but it delivered more of the natural expression of live music than either—at least with my system. I wouldn't be surprised if detractors find the highs a bit ragged. Not me.

Associated Equipment

Analog sources: Simon Yorke turntable, Graham 2.0 and Immedia RPM2 tonearms, Lyra Helikon, Parnassus D.C.t, Kondo IO-J/silver, and van den Hul Colibri cartridges.

Digital sources: Musical Fidelity X-Ray CD player, Marantz DR17 HDCD recorder, EAD DSP-9000 Mk.3 D/A processor.

Preamplification: Audio Research Reference phono stage; Lyra Arion, Audio Note AN-S6CZ step-up transformers; Ayre K-1x preamplifier.

Power amplifier: Musical Fidelity Nu-Vista 300.

Loudspeakers: Sonus Faber Amati Homeage, ProAc Future 1.

Cables: Hovland Music Groove

DIN/RCA tonearm cable. Interconnects: Yamamura Millennium 6000, Hovland G3, Wireworld Gold Eclipse. Speaker and AC: Yamamura Millennium 6000 and Quantum, Electra-Glide, JPS Labs.

Accessories: PS Audio Power Plant P300 AC conditioner, Sounds of Silence Vibraplane active isolation platform, Seismic Sink 1-3D, Finite Elemente Pagode, and Zoethecus equipment stands, Symposium Rollerblocks, Vibrapods, A.R.T. Q dampers, Walker Valid Points, Shakti Stones, Shakti On-Lines, ASC Tube Traps, RPG BAD and Abffusor panels, and Walker Audio Precision Motor Controller. —Michael Fremer

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Jim Merod - August 2000

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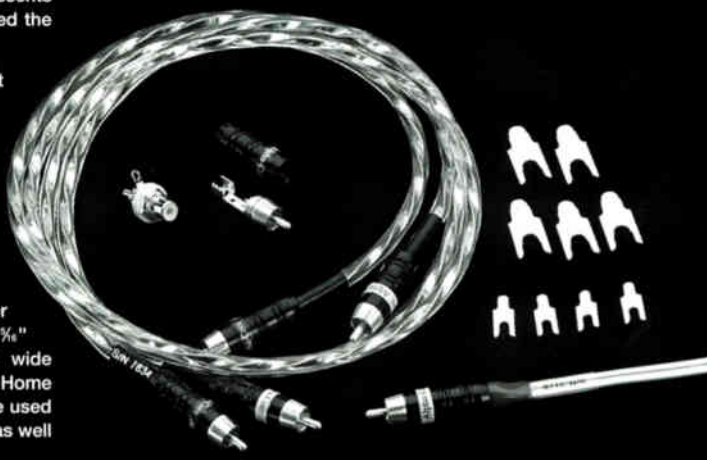
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Finally, I sometimes thought the sound was a bit lean in the midbass, and perhaps even a bit bright on top—both unusual for a tube preamp. But I'm grasping for negatives—even in the section of the review where I'm supposed to find fault, I come back to the HP-100's dazzlingly natural and incredibly supple musical presentation overall, and find myself reliving the dozens of hours of pure pleasure, not the few fleeting flashes of doubt. When John Atkinson came by to take the Hovland away for measurements, I played him the title cut from Davey Spillane's *Atlantic Bridge*. I don't think his enthusiastic reaction was good manners, nor do I think he would have responded quite so intensely had I had another preamp in the system. *[This was the first time I had done some serious listening to Michael's system. With the Sonus Faber Amatis driven by a Musical Fidelity Nu-Vista 300 power amplifier, there was a holographic intensity to the sound from LP, with what sounded like unlimited dynamic range. Even though I needed to drive back to the city, it was hard to drag myself away from the music. One interesting characteristic: what little groove noise there was via the Hovland seemed localized in a completely different plane to the music, allowing it to be perceptually discarded. —Ed.]*

Noise might be an issue for some potential phono-stage purchasers. The MC stage had an underlying hum I couldn't get rid of, and while it was inaudible under normal listening circumstances, I was bothered that it was there at all. The HP-100 is not the quietest preamp you can buy, nor did it deliver the blackest backgrounds, but it was quiet enough, and the space below the music had an unusually supple, natural quality. (I've also been using the non-Multiwave version of PS Audio's P300 Power Plant AC conditioner. While it made a definite improvement to the Ayre K-1x, for some reason it added an unwanted brightness to the Hovland.)

My biggest reservation: Over time, will the HP-100's liquidity become cloying? Will I end up craving a bit more transient edge? Or will the preamp's mellifluous splash of sound continue to create the eerie, effortless, ethereal sensation of live music—the HP-100's strongest suit?

Picayune Comparisons

Compared as a line section to the EAD DSP-9000 Mk.3 digital processor fed directly into my power amp, the Hovland HP-100 proved somewhat more transparent than the Audio Research Reference Two, retaining the direct

feed's top-end clarity and extension and most of its low-bass tautness and control (though bass dynamics are not the EAD's strong suit), while slightly enriching the overall liquidity (no surprise), harmonic presentation, and spatial differentiation in ways that, to my ears, made CDs sound more pleasing. There was a slight sensation of added noise as well, though; the Ref 2 is definitely quieter. Overall, given a choice between the EAD direct out or through the Hovland, I'd opt for the Hovland,

The Hovland HP-100 proved to be a sonic heavyweight at a relatively lightweight price.

even though it's not strictly "accurate."

I also compared the Audio Research Reference Phono section to the Hovland's in two ways. I had access to four outboard step-up transformers: the Audio Note AN-S6CZ (see this month's "Analog Corner"), the Lyra Arion, the one built into the Reference Phono, and an outboard version of the Hovland. I auditioned four cartridges in various combinations: the Kondo IO-J (see this month's "Analog Corner"), the Lyra Helikon and Parnassus D.C.t, and the van den Hul Colibri. I was busy.

The \$5000 Audio Note was the best of the bunch. I ran it and the others through the Reference Phono's MM section, and the AN's top and bottom extension, midband smoothness, and overall vividness trounced everything else. But it costs five grand. Next best, and very close, was the outboard Hovland, which maintained the Audio Note's midband magic but cooled the vividness (at least through the Reference), and was not quite as rich yet limpid in the bass. The Lyra was somewhat more polite and not as dynamic. Comparing the Reference's built-in transformer to the Audio Note or the Hovland produced a very surprising result: the Ref's transformer was noticeably polite in somewhat rolling the highs, which softened transients and greatly reduced air, shimmer, and detail.

Last and most important was a shoot-out between the Audio Note AN-S6CZ transformer into the ARC Reference MM stage (\$11,000+ in total), and the Hovland's built-in MC stage (a \$1500 addition to the line-stage version,

\$1695 as a later add-on). The AN/ARC combo was somewhat better, but the Hovland's built-in phono section sounded similar in overall balance. It just shaved off a bit of everything. Surprisingly, I preferred the Hovland's built-in phono section to the Reference's MC input, though I *was* running the Ref into "alien territory" and can't account for system interactions.

The bottom line was that the Hovland's built-in phono section was superb—hardly surprising, from the comments I've already made. And it's relatively inexpensive.

Conclusions

This review is a love fest filled with shameless superlatives, and love is blind and can disappear in a heartbeat. But the Hovland HP-100 proved to be a sonic heavyweight at a relatively lightweight price. As a \$5k line stage or as a \$6500 full-featured preamp, its overall performance provided me with the greatest musical pleasure I've gotten from a preamp. My system sang as it never has. This came as a total surprise—I was wary of what a group of "tweakers" might come up with, sonically and otherwise.

The HP-100 is solidly built, elegantly simple, a pleasure to use, behaved flawlessly, and put on a sonic show that made me want it back in my system as soon as possible. The sound was on the romantic side, but not warm and tubey in the classic sense, and the slightly extravagant liquidity I've repeatedly called your attention to was more than offset by the unit's incredible clarity, focus, textural detail, harmonic fullness, and spatial expansiveness.

In the sonic continuum of preamps I've reviewed lately—all great products, by the way—I put the Ayre K-1x to one side and the Audio Research Reference Two on the other. Midway, but closer to the Audio Research, I put the Herron VTSP-1. The Hovland goes on the other side, closer to the Ayre. Does that help?

I've been kicked in the groin on the test bench before, and I hope it doesn't happen this time—if the Hovland measures like it sounds (a reviewer's reference shouldn't be heavily colored or measure poorly), it's coming home to stay, maybe for good. While I wait, I'm spending as much time as I can with my reference Ayre K-1x so I can make a quick, informed choice when the Hovland returns. Meanwhile, find a dealer within walking, driving, or, if needed be, flying distance, and give the Hovland a listen. It's special. ■



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IMPACT

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Linn Classik CD receiver

Over the past two decades, enough advances in the high-end audio industry have trickled down to aspiring audiophiles that we now enjoy a level of high-value, high-resolution performance that would have seemed unattainable even just a few years ago. Still, immersion in a profound musical experience remains an ephemeral goal to potential converts, given the level of expertise that seems necessary to assemble a truly audiophile set of separates.

Now you and me, at the center of whose beings is the experience of music—we'll scheme and save to achieve our sonic dreams. But there are those for whom money isn't the overriding issue, who maybe can't be bothered to add another layer of complexity to their lives. By now, we've heard all the familiar excuses in triplicate: *I wouldn't know where to start... I have no place to put it... Who wants to look at all those ugly boxes?... But I only listen to music in the kitchen... Anyway, I couldn't tell the difference...* How can we imbue our experience of musical bliss with enough cachet to be pertinent, even essential, to these lost tribes of listeners?



Linn Classik CD receiver

Damn, they could've had a V8...

Perhaps by making high-end audio sexy and simple. Unfortunately, "lifestyle" systems have traditionally been triumphs of form over function, sizzle over steak. Marketing icons such as the Bose Wave Radio, and all those electronic objets d'Bauhaus from B&O, project undeniable auras of high-tech styling, and are priced accordingly. But

what devout ambassador of hi-rez reproduction hasn't experienced a pang of regret and lost opportunity when a friend shows off some expensive new can of fizz? "Damn, they could've had a V8!"

Enter the Linn Classik: a sleek, unobtrusive, uncomplicated design that does double duty as a lifestyle system and—for those who don't want the hassle of separate components—a true high-end performer.

The lessons gleaned from several generations of high-quality Linn separates, and advances in software and microprocessor technology, have led inevitably to the Linn Classik. This full-functioned receiver houses a no-compromise standalone CD player, a high-quality AM/FM tuner, and a solid-state integrated amp with a MOSFET output stage

that provides plenty of current and dynamic headroom to drive a variety of real-world speakers. The Classik allows non-enthusiasts a simple, hassle-free means of participating in an authentic, true-to-life musical experience, and offers audiophiles performance comparable to the best separates, with the convenience and cost-effectiveness of a single-box design that eliminates the need for

Description: Remote-controlled CD receiver with clock, AM/FM tuner section, MOSFET output stage, three line-level inputs, (Aux, Tape In, Tape In) and three line-level outputs (Rec Out, Pre-amp Out, Headphones). User-programmable functions: Clock, Alarm, Timer (all with automatic switch-on/off). Tuner section: 80 user-definable presets. CD-player section: triple-beam laser, delta-sigma conversion. Amplifier Section: Power output:

75Wpc into 4 ohms (15.75dBW), nominal mains. Voltage gain: 28.5dB. Pre-amplifier output impedance: 100 ohms (loads above 5k ohms recommended).

Dimensions: 12.5" (320mm) W by 3.1" (80mm) H by 12.7" (325mm) D. Weight: 13.2 lbs (6kg).

Finishes: Blue, black, silver, Arctic white, Pacifik blue, Atlantik green.

Serial numbers of units reviewed: 03653 "Assembled by Val Henderson" (final auditioning and measuring).

Price: \$1950 (black), \$1995 (colors); loudspeakers not included. Approximate number of dealers: 100.

Manufacturer: Linn Products Ltd., Floors Road, Waterfoot, Glasgow G76 0EP, Scotland, UK. Tel: (44) 141-307-7777. Fax: (44) 141-644-4262. Web: www.linn.co.uk. US distributor: Linn Products Inc., 4540 Southside Blvd., Suite 402, Jacksonville, FL 32216. Tel: (904) 645-5242. Fax: (904) 645-7275. Web: www.linninc.com.

multiple runs of expensive interconnects.

"The impetus for all of this was to produce a neat and complete, all-in-one Linn system," explains Linn's Brian Morris. "We employ high-density surface-mount boards for amplification. Linn has invested in three surface-mount solder machines in the last five years, and each one costs over a million dollars. Surface-mount is much better than traditional circuitry with hand-placed components and conventional hand-soldering. It's an automated process that allows us to improve production quality and efficiency.

"It's the practice of using high-density components on a smaller board. The

components themselves are much smaller; rolls of different components are fed into a surface-mount machine. It employs a computer program to select them, depending on the circuit-board topology, then feeds and places the components in the right place; once they're on the board, they're checked by a pincer that moves very rapidly with a camera, which you view on a monitor—it rejects all the faulty boards automatically. When the board is accepted, it rolls over a solder line, and all of the connections are soldered that way. Then it's checked over and integrated into the product, the whole idea being to have as short a signal path as possible."

The upshot of this new technology is an incredibly compact, high-performance CD receiver with a wide range of performance and programming functions—though, for me, the hi-fi aspects of the integrated amp and CD player were paramount. And while the Classik's front-panel display offers a variety of functions, it is much more logical to control the Classik with its remote handset, which also triggers advanced functions with multiple keystrokes. While it took some time to learn the lay of the land, I became reasonably practiced in the strings of commands.

The Linn's back panel, with its Aux, Tape In/Record Out, and Preamp Out

Measurements: CD Section

Fed a full-scale CD sinewave, the Linn Classik power amplifier clipped with its volume control set at "81" out of a possible 100 settings, this equivalent to an attenuation of 13dB for external sources. All measurements of the CD section were therefore done at the Preamp Out jacks with the volume set at "80," at which value the level was 814mV. This suggests that outboard amplifiers used with the Classik need a lower-than-usual sensitivity. The preamp outputs didn't invert signal polarity, and had a source impedance of 146 ohms over most of the audioband, this rising to 583 ohms at 20kHz.

The CD transport tracked gaps in the data spiral of up to 1.25mm in length without dropouts, which is excellent. The two pairs of traces in fig.1 show the CD frequency response at -12dBFS, with (bottom pair) and without (top) pre-emphasis. As is usual with British audio components, the extreme lows are rolled off, reaching -0.5dB at 21Hz and -3dB at 8Hz. There is a broad 0.2dB rise in the top two audio octaves with a pre-emphasized signal, possibly audible as a very

slight brightness but more likely as added detail. Without pre-emphasis, the top octave rises by a negligible 0.1dB at 20kHz. Channel separation (not shown) was excellent in the midrange and below, but decreased above 1kHz with increasing frequency to reach a still good 70dB at 20kHz (R-L). The L-R crosstalk was a little worse, reaching -66dB at 20kHz.

Fig.2 shows a 1/3-octave spectral analysis of the preamp outputs while the CD section decoded data representing a dithered 1kHz tone at -90dBFS. The 1kHz tone actually lies at -85dB, suggesting 5dB of positive amplitude error at this level. The noise floor is higher than I usually find for CD players, with AC components visible at 60Hz and 180Hz, and what is probably a spurious tone can be seen at 400Hz.

Extending the measurement bandwidth to 200kHz and decoding data representing a 1LSB DC offset gave the spectrum shown in fig.3. Again, some AC power-supply components are visible, as are some higher-frequency spurious. (I thought at first that the circuitry was picking up some radiated

hash from the computer monitor, so I turned it off for this and the preceding measurement.)

To generate fig.4, the CD section decoded data representing a dithered 500Hz tone that faded down to zero from -60dBFS. The level of the analog output was measured with a narrow-bandpass filter centered on 500Hz. An increasingly positive amplitude error develops below -75dBFS and plateaus at +6dB at -95dBFS, meaning that tones are twice the level they should be. Noise starts to dominate the measured level below about -100dBFS, and obscures the waveform of an undithered 1kHz tone at -90.31dBFS (fig.5).

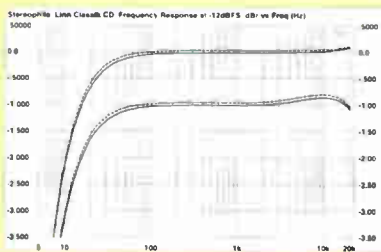


Fig.1 Linn Classik, frequency response at -12dBFS with (top) and without (bottom) pre-emphasis (right channel dashed, 0.5dB/vertical div).

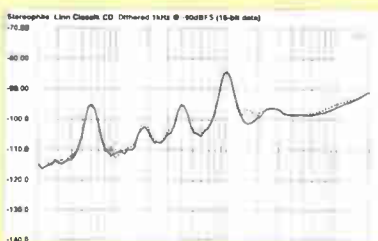


Fig.2 Linn Classik, 1/3-octave spectrum of dithered 1kHz tone at -90dBFS, with noise and spurious, 16-bit data (right channel dashed).

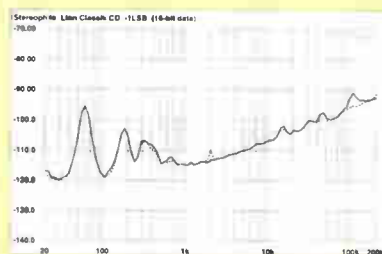


Fig.3 Linn Classik, 1/3-octave spectrum of -1LSB, with noise and spurious, 16-bit data (right channel dashed).



Fig.4 Linn Classik, left-channel departure from linearity, 16-bit data (2dB/vertical div).

connections, offers a welcome wink and nod to those of us who still archive extensive collections of cassette tapes. On the far right are more love-me/love-my-dog details: two sets of speaker outputs employing Linn/Deltron connectors, which, in accordance with EU requirements, don't expose any bare metal surfaces. "These are plastic with a brass post in the center that holds the core of the cable very tightly," Brian Morris explains. Obviously, if you purchase this unit from a Linn dealer, they can attach Linn/Deltron plugs to any manner of speaker cable, and the additional set of speaker outs allows you to biwire.

Still, it's bothersome to be denied the

use of one's reference cables. For testing purposes with my Joseph Audio RM7si loudspeakers, I stepped up from the 16-gauge cables that come standard with the Klassik and employed Linn's better K20 cables, with Linn knekt loudspeaker plugs on the speaker end, and the basic Linn/Deltron male/female connectors on the amplifier end. The Linn knekt is like a straight, hollow banana (I first used them on the AudioQuest Granite speaker cables during my Vandersteen 2CE Signature evaluation in the October issue). As the knekts are pressure-gripped, I was able to push them straight into the speaker terminal holes. Finally, on the left corner of the back chassis is

your basic IEC inlet; above that, an auxiliary-switched mains output, which allows you to use the Klassik's programming/clock functions to control external electrical devices, such as house lighting or even a coffee maker.

Steady As She Goes

The \$19,000/pair Linn Klimax mono-blocks reviewed by Jonathan Scull in October 1999 features a switch-mode power supply, as does the Linto phono preamplifier reviewed by Wes Phillips in June 1998. However, despite its diminutive size, the Klassik has a traditional AC transformer. This was a source of considerable interest to me: for all its density of

Given the very low level of the signal in these four tests, it might be possible to lower the noise floor by increasing the volume. However, I didn't think this appropriate, as the first high-level tone to come down the pike would clip the Linn's power-amplifier section.

The Klassik's preamp section offered very low distortion. Fig.6 shows the spectrum of a full-scale 50Hz tone with the volume control at "80." The third and fifth harmonics are close to the -100dB level, which is about the bottom of the Audio Precision System One's resolving power. The punishing mix of 19kHz and 20kHz tones, each at -6dBFS, which results in a wave-

form that just crests at the 0dB mark, gave a spectrum (not shown) relatively free from intermodulation products, the 1kHz difference tone lying about 83dB down. Decreasing the load impedance for these two measurements from 100k ohms to a very demanding 600 ohms introduced no significant increase in harmonic or intermodulation distortion.

Finally, I examined the Klassik's jitter performance using the Miller Audio Research Jitter Analyzer. This drives the unit being tested with a high-level 11.025kHz tone ($F_s/4$), over which is overlaid the LSB toggling on and off at 229Hz. The analyzer performs a narrow-band spectral analysis

on the player's analog output and searches the noise floor for symmetrical sideband pairs, which will be due to jitter. The Klassik's result is shown in fig.7. As suspected, the analog noise floor is about 9dB higher than the very best CD replay. And while data-related jitter (indicated with red numeric markers) is low, there are power-supply-related sidebands at ± 60 Hz and ± 180 Hz (brown "1" and "2" markers) and a strong pair of sidebands at ± 255 Hz (purple "4"). The actual jitter level is low, at 506 picoseconds peak-peak. Still, many spurious noise spikes (blue markers) compromise the CD section's overall dynamic range.

—John Atkinson

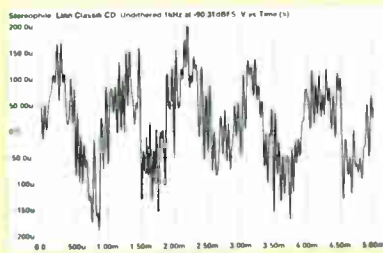


Fig.5 Linn Klassik, waveform of undithered 1kHz sine wave at -90.31dBFS, 16-bit data.

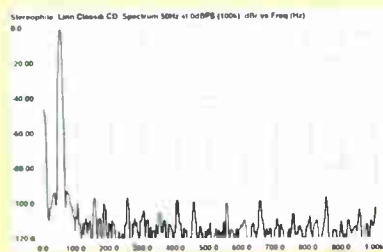


Fig.6 Linn Klassik, spectrum of 50Hz sine wave, DC-1kHz, at 0dBFS into 100k ohms (linear frequency scale).

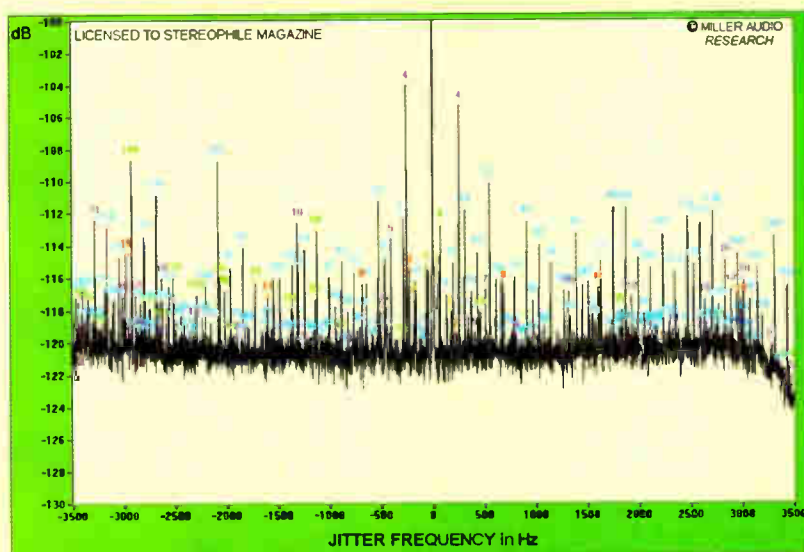


Fig.7 Linn Klassik, high-resolution jitter spectrum of analog output signal at Preamplifier Out jacks (11.025kHz at -6dBFS with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range, ± 3.5 kHz.

components, the Classik was always warm to the touch. According to Brian Morris, "the internal heatsink is connected to the casework, and heat is dissipated through the casework and the chassis uniformly, so there are no hot spots or cold spots. You'll find the product warm, uniformly, throughout."

At first I ran the Classik as a nearfield system on my computer desk, then as part of a practice system on a cart behind my drum set. In both applications I employed Linn's now-discontinued Tukan speakers—a small, warm-

sounding two-way whose performance, like many such bookshelf designs, is optimized by proximity to a back wall, which beefs up the bass and sweetens the highs. But when I moved the Classik into my main listening space, the Tukans lost some of their transient snap and dynamic range as I situated them farther into the room. In any event, it seemed appropriate to judge the Classik's performance based on its ability to drive my reference speakers of late: the floorstanding, full-range Celestion A3s and the Joseph RM7s's. In neither case

did I biwire them, but the differences in speed, resolution, and immediacy were dramatic in stepping up to the better speaker cables, the Linn K20s.

To keep the playing field level, I used the same Synergistic Research Designer's Reference² AC Master Coupler power cord I've used in all of my recent preamp and integrated amp reviews. Reviewing the tuner section initially proved problematic, as the only antenna I could use in my apartment was some humble rabbit ears. Eventually I got hold of a Magnum Dynalab Model SR 100

Measurements: Amplifier Section

The Linn Classik was preconditioned at $\frac{1}{3}$ full power for an hour, which maximally stresses the output stage. The blue-painted metal chassis was hot, though not so much that I couldn't keep my hand on it. All amplifier measurements were taken with the volume control set to its maximum setting of "100." The control operates in accurate 1dB steps, though a number of settings produced no change in level. Settings of "80," "79," and "78" were all equivalent to an attenuation of 14dB compared to full scale, for example. The unity gain setting is "46," which is 38dB down from the maximum level. With the control set to "100," an input of 100mV at the Aux input produced 7.733V out into 8 ohms, giving a maximum voltage gain of 37.8dB—higher than what would typically be required for normal playback levels.

The amplifier section doesn't invert absolute polarity, and channel separation was only a moderate 54dB across the band. The Classik's input impedance for external line-level source components was a sensible 47k ohms over most of the audioband, this dropping slightly to 42.2k ohms at 20kHz. The output impedance was a moderate 0.114 ohms at 20Hz and 1kHz, rising to 0.125 ohms at 20kHz.

As a result, there is very little modification of the amplifier's frequency response when measured into our standard simulated loudspeaker load (fig.8, top trace at 2kHz). The overall response is sensibly arranged to roll off above and below the audioband, the former slightly rounding off the leading edges of a 10kHz squarewave (fig.9). The 1kHz squarewave (not shown) had an essentially perfect shape.

The treble and bass controls each operate in seven positive and seven neg-

ative steps. Their maximum effect is shown in fig.10, where it can be seen that the bass control actually functions as a bandpass boost/cut control, the former presumably compensating for the low-frequency rolloff of Linn's small Tukan speaker.

The A-weighted signal/noise ratio (ref. 1W/8 ohms) was moderate at 77.2dB, this worsening slightly to 68.6dB with a wideband, unweighted measurement. For small signals, the measured distortion (fig.11) was dominated by noise below 2kHz, though the inevitable rise at higher frequencies and into lower impedances can be seen in this graph.

To capture the actual distortion waveform, I had to operate the amplifier at high power levels. Fig.12 shows the result

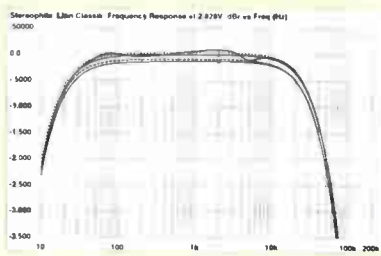


Fig.8 Linn Classik, frequency response at (from top to bottom at 2kHz): 2.83V into dummy loudspeaker load, 1W into 8 ohms, and 2W into 4 ohms (0.5dB/vertical div.).

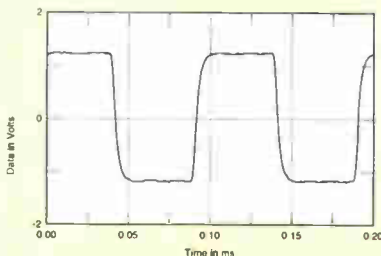


Fig.9 Linn Classik, small-signal 10kHz squarewave into 8 ohms.

at 73W into 4 ohms: the subjectively benign second harmonic is predominant, though some higher-order harmonics are also present. One odd characteristic

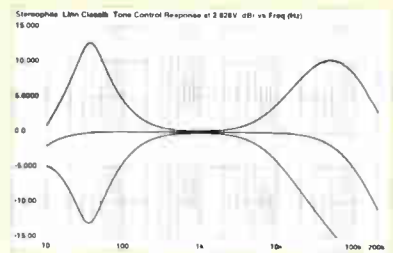


Fig.10 Linn Classik, effect of treble and bass controls set to their maximum and minimum positions (5dB vertical div., right channel dashed).

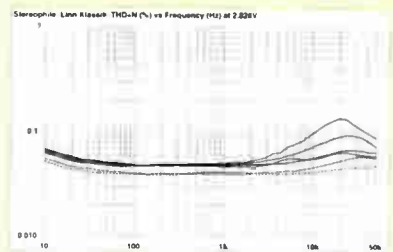


Fig.11 Linn Classik, THD+noise (%) vs frequency at (from top to bottom at 4kHz): 4W into 2 ohms, 2W into 4 ohms, 2.83V into simulated loudspeaker load, and 1W into 8 ohms (right channel dashed).

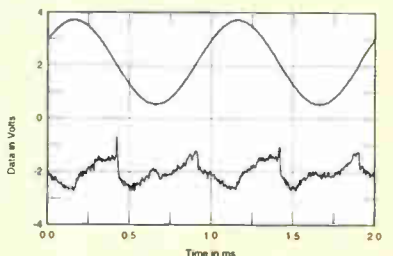


Fig.12 Linn Classik, 1kHz waveform at 73W into 4 ohms (top), distortion and noise waveform with fundamental notched out (bottom, not to scale).

Silver Ribbon indoor antenna, which enabled me at last to overcome some of the terrible multipath interference endemic to this area of Northern Manhattan (a few blocks to the northeast of the George Washington Bridge). The Klassik tuner section features a mute threshold adjustment that allows you to reject weak signals when in scan/search mode, with a range of "1" (receive all signals) to "50" (receive only the strongest signals). The Silver Ribbon's leads were not as long as the rabbit ears, so on some stations, even as I observed a

drop in optimal signal strength, the degree of resolution increased dramatically. With a few of the stronger stations I was able to enjoy very good stereo separation and imaging, freedom from crosstalk, a very musical depiction of dynamics, a warm and open midrange, a lack of top-end sibilance, and no apparent honkiness in human voices.

As for the Klassik's CD section, once I'd overcome an initial performance glitch, I found it to possess a very clear, deep midrange, with remarkable bass extension and a smooth, open top end —

very detailed without being edgy or italicized. In fact, on some CDs it might've been a tad laid-back. It was here that I found the Klassik's subtle tone controls — yes, *tone controls* — to be quite musically useful; I found that one or two steps up in treble generally sweetened the portrayal of source material and opened up the soundstage in a natural manner. I used the Bass control less often, save for low-volume listening late at night, and on older recordings such as Marvin Gaye's *The Master: 1961-1984* (Motown Master Series 31453 0492 2),

was that as the amplifier approached clipping, some spikes started to appear in the distortion waveform (fig.13) and increased in level with time, suggesting a

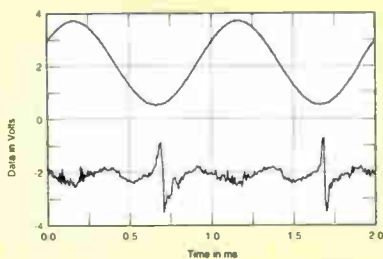


Fig.13 Linn Klassik, 1kHz waveform at 56.5W into 8 ohms (top), distortion and noise waveform with fundamental notched out (bottom, not to scale).

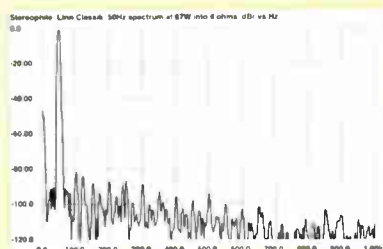


Fig.14 Linn Klassik, spectrum of 50Hz sine wave, DC-1kHz, at 57W into 4 ohms (linear frequency scale).

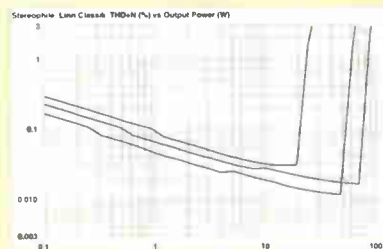


Fig.15 Linn Klassik, distortion (%) vs continuous output power into (from bottom to top at 2kHz): 8 ohms, 4 ohms, and 2 ohms (both channels driven).

power supply operating with little margin. (The THD level in this measurement was 0.022%.) The Klassik will not be an amplifier you turn to for sustained high-power party music, I suspect.

Fig.14 shows the spectrum of the Linn's output while operating at around $\frac{2}{3}$ the clipping power into 4 ohms. Again, the second harmonic is the highest in level, though the third through eighth harmonics can be seen between -90dB and -100dB. Note the spectral lines at 120Hz and 240Hz, which again suggest a power supply that is being asked to work hard. Driven just below the clipping point with a mix of 19kHz and 20kHz tones, the Klassik's output spectrum (not shown) showed a 1kHz difference tone at a lowish -75dB, as well as second-order products at 18kHz and 21kHz at the same level.

Conservatively specified at 75Wpc into 4 ohms (15.75dBW), the Linn

proved capable of delivering more continuous power, even with both channels driven (fig.15). Into 4 ohms, 84W were available at the usual 1% THD+N clip point (16.25dBW), with 50W measured into 8 ohms (17dBW). Only into 2 ohms under continuous drive did the Klassik stumble, with just 23W available (7.6dBW).

With a low-duty-cycle 1kHz toneburst, which more closely resembles a real music signal, the Linn Klassik belied its tiny size by pumping out 80.4W into 8 ohms (fig.16, black trace), 131.8W into 4 ohms (red), 164.2W into 2 ohms (blue), and falling back into 1 ohm with only 47.1W available (green). The 2 ohm delivery is equivalent to an RMS output current of 9.05A, which is very respectable.

The Linn Klassik is by far the most powerful "clock radio" I have ever encountered!

—John Atkinson

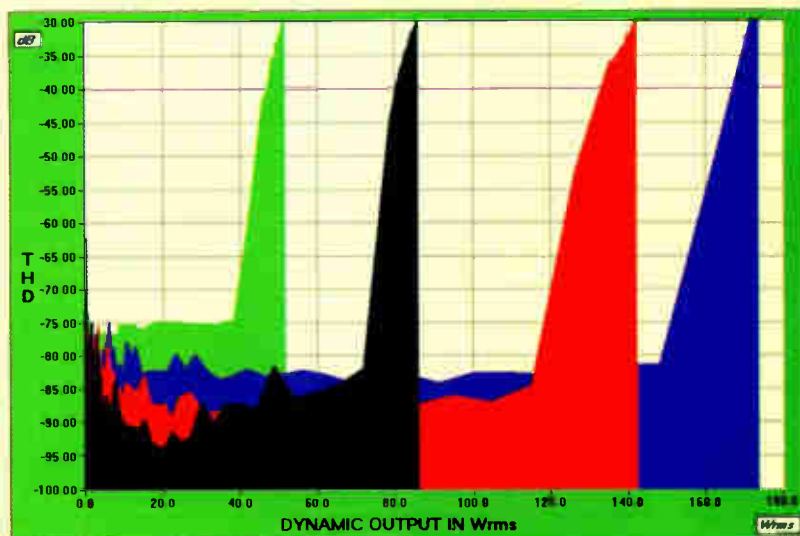


Fig.16 Linn Klassik, distortion (%) vs 1kHz burst output power into 8 ohms (black trace), 4 ohms (red), 2 ohms (blue), and 1 ohm (green).

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McCormack DNA-225 power amplifier

Back in 1992, Robert Harley's *Stereophile* review of the McCormack DNA-1 and Parasound HCA-2200 amplifiers (April 1992, Vol.15 No.4) and the accompanying technical measurements piqued my interest. So, with great curiosity, I arranged to borrow a DNA-1 to audition, along with competitive amps from Aragon, Bryston, and PS Audio. They were all a leap ahead of my Adcom GFA-555, but it took an act of great courage to accept that, despite its less-than-stellar measured performance, the DNA-1 was my favorite. The bottom line was that the DNA-1 excelled at driving my Apogee Duet-tas to make lively and harmonically pure sounds. I bought my McCormack DNA-1 amplifier before I began reviewing equipment for *Stereophile*, and it still occupies an honored place in my system.

My choice was confirmed by the long-term popularity of the DNA-1 and its sibling, the DNA-0.5. It was a sad day when their manufacturer, the California-based McCormack Audio, née The Mod Squad, went out of business and these wonderful amps became orphans.

But there was a happy ending. A new company, McCormack Audio Corporation of Virginia, owned by Bill Conrad and Lew Johnson, of Conrad-Johnson fame, is offering handsomely updated versions of the DNA-series amps as well as the new RLD-1 pre-amp/controller, and will service older McCormack amplifiers. Steve McCormack's SMC Audio (see sidebar, "Genetic Engineering") also offers upgrades to the original DNA amps, and Steve is still the guiding spirit behind these new models, which incorporate aspects of the original designs, much of the SMC upgrades, and some new wrinkles. I quickly put in my bid for a test sample of the DNA-225.

DNA Evidence

The eponymous feature common to all DNA amps is the Distributed Node Amplifier concept, described as the distribution of the total power-supply



McCormack DNA-225 power amplifier

capacitance as a series of smaller capacitors, located as close as possible to individual output transistors. This proximity permits the stored charge to be available to the active device with no intervening circuitry. Because each capacitor is, of necessity, smaller than would be a single device comprising their total storage capacity, sonically superior types can be used.

The DNA-225 and the smaller DNA-125 carry on this tradition while forgoing the original series' complex DC-servo amplifier, needed to control DC offset and drift. To accomplish this, the DC gain is reduced significantly but not all the way to zero (unity gain); to do so, says Steve McCormack, would affect the perceived bass performance. However, because of the low DC gain, static DC trim is sufficient to control offset. The low DC gain also allows McCormack to take advantage of newly available capacitors with outstanding sonic performance to complete the DC-blocking task.

The curious might consider substituting their favorite hotshot caps. The truly adventurous might experiment by eliminating the series input caps completely, although this could expose the speakers to any DC that might be passed through the amp. Either effort will change the sound and will probably violate the warranty. (Did someone say tweak?)

The DNA-225 also sports revised topology in the J-FET/MOSFET driver stage, as well as refined output-stage biasing. The former is particularly

Description: Solid-state stereo power amplifier with one pair of line-level, RCA inputs and four multiway binding posts. Continuous power: 225Wpc into 8 ohms (23.5dBW), 400Wpc into 4 ohms (23dBW), both channels driven, 20Hz–20kHz, <1% THD. Input sensitivity: 1.25V. Input impedance: 100k ohms. Harmonic distortion: 0.5% (1kHz, 8 ohms). Frequency response: 0.5Hz–200kHz, –3dB. S/N Ratio: 100dB. Voltage gain: 30dB. Signal polarity: noninverting. Power requirements: 1.1A/130W at idle, 5A/600W at clipping (8 ohms).

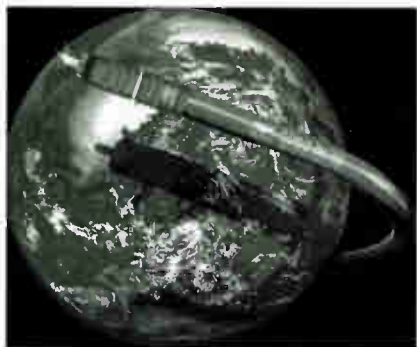
Dimensions: 19" W by 6 7/16" H by 16" D. Shipping weight: 54 lbs.

Serial Number of unit reviewed: M5301060.

Price: \$2795. Approximate number of dealers: 45.

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critical; this stage is designed to clip before the output stage, giving the amp a more graceful overload characteristic than it would from a misbehaving bipolar output stage. Of course, the DNA-225's high power output makes such an event unlikely. Like the original DNA, the DNA-225 is a no-nonsense amp.

The front panel has a power switch and indicator LED, the rear panel a pair of RCA input jacks and two pairs of speaker binding posts. An IEC power cord and connector and a line fuse complete the external features. In place of the retiring gray of the older series, the DNA-225 has a matte-silver front panel with a large McCormack logo above the power switch—sort of like a DNA-1 with a new suit.

The big surprise was when I flipped the power switch and got... music! Having lived so long with the DNA-1, whose DC servo mutes the output for about 10 seconds as the amp stabilizes, I was taken aback by the instant gratification afforded by the DNA-225. The manual says that there's a break-in period of 50 hours, and that optimal opera-

tion requires a 30-minute warmup thereafter, but I can't vouch for that. The amp seemed a bit hard initially, but that perception faded rapidly and didn't recur. My practice soon became to leave

**The big surprise
was when I flipped the
power switch and got...
music!... I was taken
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gratification afforded
by the DNA-225.**

the amp on most of the week, give it a rest on weekends, and jump right in on my return; even the precautionary warmup wasn't really necessary.

At turn-off it was the other way around: The servos in the original DNA-1 take over immediately to mute the output; the DNA-225's out-

put fades slowly as the power-supply caps discharge.

The Trial

Before settling in with the DNA-225, I considered another recommendation, one not mentioned in the instructions: Steve McCormack insists that a beefy aftermarket power cord is needed to get the best out of the amp.

I was skeptical, but tried the stock IEC and Audio Power PL313-6 cords that I use with my Rev.A DNA-1. The DNA-225 sounded okay with both. However, when the Harmonic Technology Pro-AC11 AC cord connected the amp to the wall, it was evident that Steve was right. I can't fathom why a 6' AC cable should so smooth and soften the tonal balance of a power amplifier, but the DNA-225 was a much better amp with the Harmonic Tech AC cord, and all of my listening comments are based on its use.

The DNA-225 is a bear. Not since the pricier SimAudio W-5 had I used a single-chassis amp of such seemingly unlimited power. I used the DNA-225

Measurements

After a one-hour preconditioning period at one-third power, which maximally works an amplifier with a class-B output stage, the McCormack's heatsinks were too hot to keep my hand on them. After another 30 minutes of continuous high-power testing, the DNA-225's thermal trip circuit turned off the power until the amplifier had cooled down.

The DNA-225's input impedance was high at 91k ohms, dropping slightly to 73k ohms at 20kHz. The voltage gain into 8 ohms was higher than usual, at 30.5dB. Both of these factors will make the McCormack a good choice for use with a passive volume control, though pairing it with a typical tube preamplifier will result in too much system gain. The amplifier didn't invert absolute polarity.

The output impedance was very low, at 0.07 ohms at lower frequencies and 0.1 ohm at 20kHz. As a result, any modification of the amplifier's frequency response due to interaction between its source impedance and the loudspeaker impedance will be minimal (fig.1). The response is sensibly arranged to roll off above the audioband, reaching -3dB around 140kHz, which slightly increases the risetime on a

10kHz squarewave (fig.2). Channel separation (not shown) was below the noise floor in the midrange and bass, but diminished at the usual 6dB/octave above 1kHz to reach 66dB (R-L) and 58dB (L-R) at 20kHz; both figures are quite acceptable.

The unweighted S/N ratio, measured over a wide 10Hz-500kHz bandwidth and referred to 1W into 8 ohms, was a slightly high 67dB, this improving to 83.2dB with A-weighting. Because of this slightly higher noise, I plotted the change in THD+noise with frequency at 10W into 8 ohms rather than the usual 1W, in

order to reduce the contribution of the noise. The results are shown in fig.3. Reducing the load impedance to below

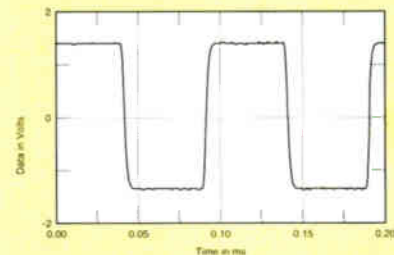


Fig.2 McCormack DNA-225, small-signal 10kHz squarewave into 8 ohms.

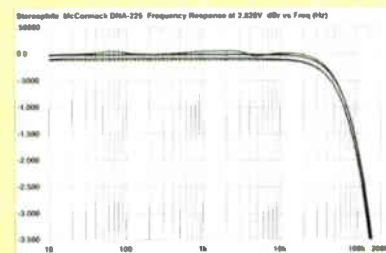


Fig.1 McCormack DNA-225, frequency response at (from top to bottom at 20kHz): 2.83V into dummy loudspeaker load, 1W into 8 ohms, and 2W into 4 ohms (0.5dB/vertical div.).

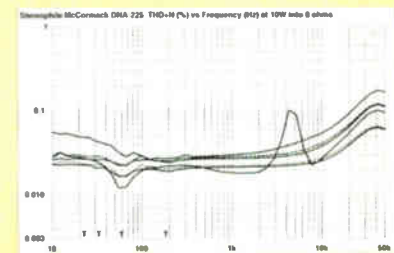


Fig.3 McCormack DNA-225, THD+noise (%) vs frequency at (from top to bottom at 4kHz): 2.83V into simulated loudspeaker load, 4W into 2 ohms, 2W into 4 ohms, and 1W into 8 ohms (right channel dashed).

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with the Revel Studios, and the combination was capable of clean sound at unconscionable, painful, downright unneighborly levels way beyond what I could tolerate with the original DNA-1. Large dynamic shifts could be enormous, as was apparent with Mahler's Symphony 6 (Glen Cortese/Manhattan School of Music Symphony Orchestra, Titanic Ti-257). If I listened to the piquant details in quiet sections at reasonable levels, the louder portions demanded—and achieved—huge SPLs without congestion. Microdynamic increments were quite distinct with all sources, and the DNA-225 invested the music with liveliness and bounce. This was almost always invigorating, but careful gain-setting was required with some smaller-scale recordings.

The DNA-225's tonal balance is evolved from the DNA-1's, but the new amp had none of the original's midbass warmth; it seemed somewhat lean in a direct comparison. Extended listening confirmed that the DNA-225 was definitely more accurate and did

not lack anything in the midbass or slam departments. It was taut and powerful at the extreme bottom, sounding more like the estimable Bryston 7B-ST than the old DNA. The reduction of

Extended listening confirmed that the DNA-225 was definitely more accurate and did not lack anything in the midbass or slam departments.

DC gain and use of a DC blocking cap seem not to have made an iota of compromise in the bass response.

One concomitant of this exemplary performance in the lower half of the spectrum was that the amp's upper range was laid bare. The DNA-225 provided quite fluid and clear rendi-

tions of voice, and was not caught out by any of the standard reference discs. I especially appreciated the DNA-225's mid- and high-frequency performance with the best high-resolution sources, although on some discs the amp's HF precision could veer into revealing some brightness. The DNA-225 would seem to have tamed the DNA-1's tizzy extreme top, which was so spicy through my old Apogeos.

A new recording of Beethoven's *Fidelio* (Naxos 8.660070-71), conducted by Michael Halász, sounded absolutely riveting when rendered by the DNA-225. While you might recognize only a few of the names in the cast list, this *Fidelio* stands with my longtime favorites from Klemperer and Furtwängler—and, unlike those classics, the sound is first-rate. Orchestral weight and detail seemed optimal, with no unnatural spotlighting of voices in the vocal ensembles.

My ears quickly adapted to the small tonal differences between the DNA-225 and the Sonic Frontiers Power 3s, but less readily to their differences in

Measurements

1kHz makes little change in the distortion content, but there is more of a change in the treble, as well as an overall increase in THD at high frequencies. While the THD+N figure only just rises above the 0.1% or -60dB level above 20kHz, this HF rise does suggest that the amplifier has a limited open-loop bandwidth, with only moderate negative feedback despite the low output impedance.

The residual distortion waveform (fig.4) has considerable third-harmonic content, this also apparent from the spectrum of a high-level low-frequency tone (fig.5). The third harmonic doesn't change in level as the load

impedance drops, but is joined by increasing amounts of the second harmonic and by increasing 60Hz, 120Hz, 180Hz, and 240Hz components, due to the higher stress on the power supply. Nevertheless, the overall distortion and level is low: Even at this high power, the individual harmonic and power-supply components sum to 0.04%. The decreasing amount of corrective feedback at ultrasonic frequencies leads to more intermodulation products than usual with the punishing high-level mix of 19kHz and 20kHz tones (fig.6), but these products are all at very low levels.

The big McCormack more than

meets its specification under continuous drive conditions with both channels driven (fig.7). Defining clipping as 1% THD+N, the maximum power

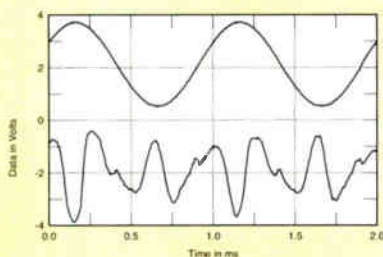


Fig.4 McCormack DNA-225, 1kHz waveform at 20W into 4 ohms (top), distortion and noise waveform with fundamental notched out (bottom, not to scale).

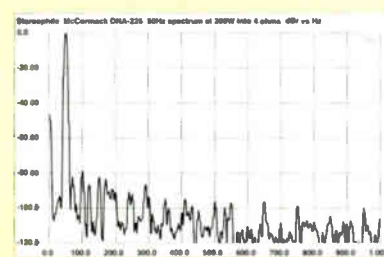


Fig.5 McCormack DNA-225, spectrum of 50Hz sine wave, DC-1kHz, at 100W into 8 ohms (linear frequency scale).

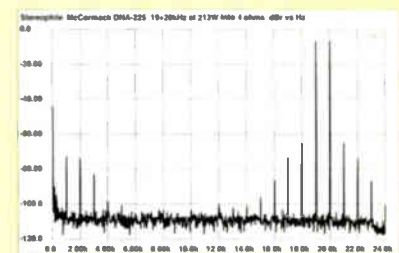


Fig.6 McCormack DNA-225, HF intermodulation spectrum, DC-22kHz, 19+20kHz at 213W into 4 ohms (linear frequency scale).

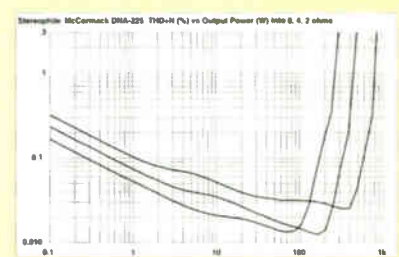


Fig.7 McCormack DNA-225, distortion (%) vs continuous output power into (from bottom to top at 2kHz): 8 ohms, 4 ohms, and 2 ohms (both channels driven).

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imaging and soundstaging. The DNA-225's instrumental and voice placement was quite punctate, but its sound image was confined laterally by the speaker boxes and lacked depth. Replacing the DNA-225 with the DNA-1 broadened and deepened the soundstage at the notable expense of precision and detail. Alternatively, if I toed-in the Revel Studios less or moved my listening seat much closer (both ploys made the speaker axes cross well behind me), the DNA-225 projected an excitingly immediate sound, wide and deep. Many nearfield listeners will favor this type of presentation.

On "Too Proud," the voice of Mighty Sam McClain (*Blues Quest*, AudioQuest AQ-CD1052) had an in-my-face presence, and the backing combo was meticulously arrayed across my room's back wall. This was sonically thrilling but almost too intense. If I put the room back to normal and switched over to the Power 3s, I gave up nothing in the power, space, and smoothness departments, but gained a more relaxed presenta-

tion, one more conducive to long-term musical enjoyment.

As I've admitted before, these subtle perceptions depend heavily on speakers, speaker placement, and room acoustics: I felt that the DNA-

The Kharma's disarmingly silky mid and treble performance was the perfect complement to the DNA-225's vivacity.

225 might be more compatible with speakers other than the Revels. The Studios can be quite ruthless, especially in the top end, and at times make mountains of molehills, to the chagrin of associated equipment and sources. I had a brief opportunity to run the DNA-225 with the (suitably EQ'd) Kharma Ceramique CE-2.0s that I

reviewed in October and thought that combination sounded much better. The Kharma's disarmingly silky mid and treble performance was the perfect complement to the DNA-225's vivacity. There were no soundstage or brightness issues, but oodles of detail and palpability.

In rigorous evaluations I often rely on piano recordings and the DNA-225/Kharma system got just right the percussive edges, the tonality, and the overtones of Marc-André Hamelin's breathtaking performance of Rzewski's *The People United Will Never Be Defeated!* (Hyperion CDA67077). It did as well with Rubén González's "Siboney" (*Introducing Rubén González*, World Circuit/Nonesuch 79477-2). Of course, Hamelin's tone was brighter and had more concert-hall reverb than did González's piano, recorded in a dry studio, but both pianos were presented with just the appropriate ambience. In fact, this was an object lesson in component matching: the DNA-225/Kharma gave me an alternate way to arrive at excellent sound.

Measurements

raised was 262W into 8 ohms (24.2dBW), 430W into 4 ohms (23.3dBW), and 795W into 2 ohms (23dBW, only one channel driven). The shape of the traces in this graph reveals that noise dominates the measured figure until quite high levels.

With a low-duty-cycle 1kHz tone-

burst, which generates results that more closely resemble what happens when the amplifier is amplifying music, the DNA-225 was revealed as a powerhouse. Fig.8 again plots the change in THD with output power (noise not now included), with the 1% clipping point shown as the horizontal

magenta line. No less than 303W were raised into 8 ohms (black trace), with 575W available into 4 ohms (red), 1018W into 2 ohms (blue), and 1532W into 1 ohm (green).

But that's not the end of the story. I plotted this graph using a decibel vertical scale rather than the usual percentage scale, which more clearly shows what happens at high powers. The McCormack actually clips very gently, meaning that to pick the 1% THD point is more arbitrary than with an amplifier that hard-clips. Under real-world conditions into low impedances, the DNA-225 rolls up its sleeves and puts out serious current—more than 40A into 1 ohm!

The McCormack DNA-225's measured performance reveals a good balance between the designer's use of what must be a relatively low level of overall negative feedback and the gain/noise/distortion tradeoff. Especially considering its price, the amplifier behaves impressively close to a voltage source under the dynamic conditions of music.

—John Atkinson

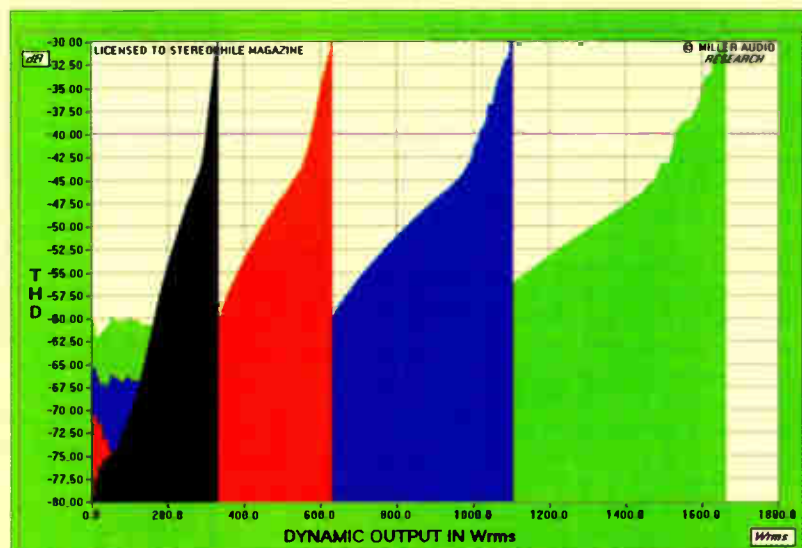


Fig.8 McCormack DNA-225, distortion (%) vs 1kHz burst output power into 8 ohms (black trace), 4 ohms (red), 2 ohms (blue), and 1 ohm (green).

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Genetic Engineering

As a public devotee of the DNA-1, I have been besieged with e-mail from dedicated McCormack fans asking about Steve McCormack's SMC Audio modifications to the original DNA-1, DNA-0.5, and DNA HT-1 amplifiers. But, being a seasoned but reforming tweeker, I take a dim view of most aftermarket modifications. Sure, most of them will make a difference; but lacking a reference or A/B comparison, how can you know the difference is a positive one? In this case, the original designer himself says so; moreover, I had an original DNA-1 and a new DNA-225 on hand to compare to my SMC-modified DNA-1.

The basic Rev.C DNA-1 mod (\$375), the essential core of all the mods, eliminates the DC servo by reducing the DC gain to near zero so that a simple offset trim keeps the amp from welding your woofer's voice-coils into solid metal. Along with some other improvements, this is similar to the DNA-225's topology, except that SMC does not use DC blocking caps in the signal path. The Rev.B mod (\$450-\$700) adds Cardas binding posts, Kimber RCA jacks, Cardas board-to-board wiring, and heavy-gauge van den Hul output wiring. Because Rev.B also includes an upgrading of signal-path components similar to that in McCormack Audio's well-received Deluxe Edition amps, the cost of Rev.B (and Rev.A) is lower for Deluxe Edition amps than for the plain-vanilla ones.

Rev.A (\$850-\$1200) is, as SMC calls it, "the Full Monty"! Every single part affecting the signal, including output-stage caps and emitter resistors, is replaced with what he feels to be the best available, resulting in a complete rebuild of the amp. My DNA-1 is a Rev.A with a plus: switched balanced XLR inputs via studio-quality Jensen transformers (a \$450 add-on).

Run from the Sonic Frontiers Line 3 via a balanced JPS Super-Conductor 2 interconnect, my Rev.A+ amp seemed noticeably quieter, less ripe in the midbass, and decidedly smoother in the HF than the original DNA-1 via single-conductor Cardas Cross.

Fair comparison? Of course not, but the Rev.A+ DNA-1 was still superior with the Cardas cable, although the balanced connection made the distinction clearer. Compared to the SF Power 3, the Rev.A+ DNA-1 had a bit more bounce and dynamics but lacked the tube amp's achingly delicate detail and tonal integrity. That said, I switch between them for many reasons and never feel deprived.

This raises the obvious question of whether the current owner of a DNA amp should go for the mod or trade up to a DNA-225, which already includes much of the Rev.C mod (and more). The new amp has greater power, much more than is suggested by comparing the quoted numbers, and the DC blocking caps make it bulletproof. In addition, the new amp comes with a three-year warranty. As for sound, it's a toss-up; the Rev.A+ DNA-1 mated well with the Revels, while the DNA-225 made a happier union with the Karma Ceramiques.

If you own a DNA-1 and wish it were smoother and less assertive, you should go, at the minimum, with the Rev.C mod, which frees you from the DC servo. But whether that buys you enough to trump the DNA-225, I can't say. I'll be keeping my Rev.A+ after the DNA-225 goes back—the Rev.A's balance is more appropriate for my system and room, and besides... I already own it! On the other hand, if you want to keep the DNA-1's irrepressible vitality but want more power and resolution, sell it and get a DNA-225. The resale price of a DNA-1 will get you nearly halfway.

But is a used DNA-1 plus mod a better deal than a new DNA-225 for someone just building a new system? Even my full-bore Rev.A+ isn't better than the DNA-225; it's just different. Unless there's some basic incompatibility with your intended setup, go with the DNA-225. It's a great amp right out of the box.

—Kalman Rubinson

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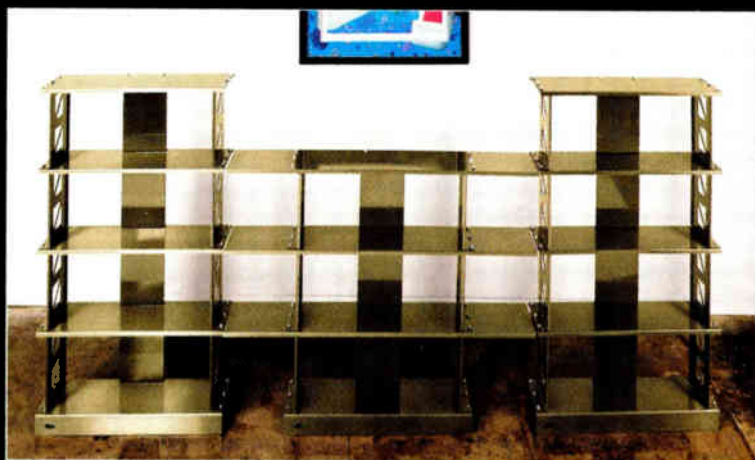
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Final Assay

When I auditioned the original DNA-1, no one was looking over my shoulder. Now a bit more weight rides on my conclusion. There's no question that the DNA-225 is a better amp than

I can best commend the DNA-225 as the worthy successor to the DNA-1, which it improves on in almost every way.

the DNA-1, or that its improvements have kept up with advancing standards. The DNA-225 is one of the best big amps around. But it's also true that the DNA-225 costs nearly half again as much as the DNA-1 in 1992, and there's no shortage of competition in this price category.

I can best commend the DNA-225 as the worthy successor to the DNA-1, which it improves on in almost every way: The power reserves seem limitless, the bass is tight and generous, the resolutions of tone and detail are excellent, and the harmonic balance is fat-free. Steve McCormack's done it again. 

Associated Equipment

Digital sources: Meridian 508-24 CD player, Meridian 800 DVD/CD transport, Mark Levinson No.360 D/A converter.

Preamplifier: Sonic Frontiers Line 3, Z-Systems rdp-1 digital.

Power amplifiers: McCormack DNA-1 and DNA-1 Rev.A+, Sonic Frontiers Power 3.

Loudspeakers: Revel Ultima Studio, OLS Kharma Ceramique CE-2.0.

Cables: S/PDIF digital: Apogee Wyde-Eye, Illuminations D-60.

Interconnects: Cardas Golden Cross, Straight Wire Maestro II (DAC-preamp); Cardas Cross, JPS Balanced Super-Conductor 2 (preamp-power amp). **Speaker:** AudioQuest Granite, Straight Wire Maestro II.

— Kalman Rubinson

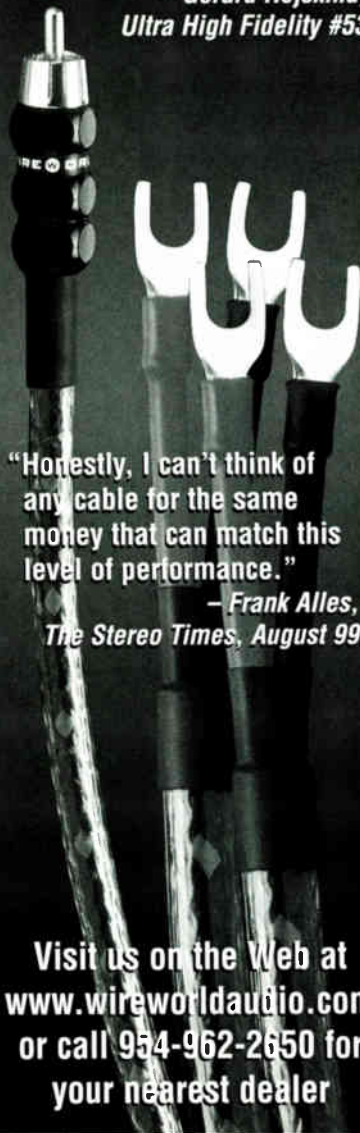
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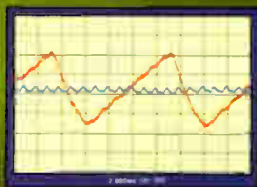


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Audio guru Wes Phillips ranks the Musical Fidelity A3^{CR} power amp with gear that costs "from five times to more than ten times the cost of the A3^{CR}." Clean, revealing performance is the key. The Choke Regulated power supply technology provides the purest possible power to the audio circuits. Frequency response of both components is a staggering 10 Hz to 100 kHz. "It didn't really matter what type of music was played, the result was the same: an inspirational listening experience," raves the June 2000 Hi-Fi News & Record Review. You could spend several times the money on a power amp/preamp combo. But it won't buy you better sound than the A3^{CR}.

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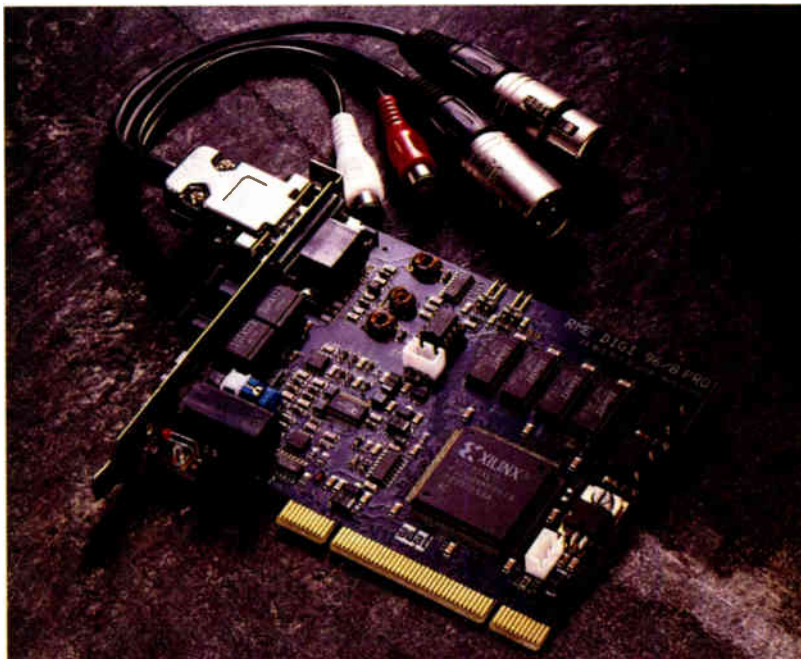
Musical Fidelity components are available in the U.S. exclusively at Audio Advisor.

RME Digi96/8 Pro computer soundcard

In the early days of digital audio, I remember talking with Dr. Tom Stockham, the developer of the groundbreaking Soundstream system used by Telarc. As well as using a 50kHz sample rate, the excellent-sounding Soundstream stored its 16-bit data on large drum-shaped Winchester drives driven by a minicomputer. Twenty years later, the advent of ultra-high-density magnetic storage media and fast microprocessor chips has put high-resolution digital audio manipulation and storage within reach of anyone with a modern PC or Mac. And facilitating the transformation of the PC into a high-quality DAW has been a new generation of soundcards, such as the Digital Audio Labs CardDeluxe I reviewed in September and the subject of this review, the German RME Digi96/8 Pro.

Pro Digital Audio

The Digi96/8 Pro is a small printed-circuit card that fits in one of the PCI slots in a PC or a Power Mac. It was recommended to me by a Swiss programmer, Hans-Peter Widmer, who has developed a suite of FFT-based



RME Digi96/8 Pro computer soundcard

audio measurement tools¹ that make use of it. As well as using it to evaluate the Widmer software, I found the RME card an excellent way of adding digital audio to my PC.

The Digi96/8 Pro is a development of an earlier RME card, the Digi96 (no longer available), which offered just

digital I/O. The Pro adds a 96kHz-capable unbalanced stereo analog output, on a standard tip-ring-sleeve 1/4" jack. (The tip is the left channel, the ring the right.) The analog section is specified as using 20-bit DACs, and a rear pushbutton switches between a full-scale output of +4dBu or -10dBV.

¹ For details on HPW Works v.2.70.004, which is available in a Lite version for \$69, a 16-bit Full version for \$200, or a 24-bit Pro version for \$300, visit www.hpw-works.com.

Description: Computer soundcard with PCI-bus interface (Mac- and PC-compatible); one pair of unbalanced analog outputs on a 1/4" TRS jack; digital (S/PDIF coaxial and optical, and AES/EBU; ADAT optical) input and output. Sample rates supported: 32, 44.1, 48, 64, 88.2, 96kHz (unit will operate with reference word clocks from 25kHz to 105kHz). D/A resolution: 20 bits maximum. Nominal analog output level: +10dBu, externally switchable to -2dBu. Dynamic range: 96dB (RMS unweighted), 98dB (A-weighted). Full-scale THD+noise: -85dB. Supplied accessories: setup CD-ROM, electrical S/PDIF and

AES/EBU I/O adapter cable, DIGI-Check analysis program. Optional extras: Word Clock Module (with Master Clock and Test Generator); AEB4-1 and AEB8-1 analog expansion boards with 4 balanced and 8 unbalanced inputs, respectively.

Computer requirements: Pentium running Windows 95/98 or NT 4.0, or Macintosh Power PC running MacOS. (Linux and BeOS also supported.) Appropriate digital audio workstation applications such as Sound Forge, Cakewalk, Cubase VST, CoolEdit, Opcode Studio Vision Pro, Prosoniq Sonic WorkX, etc. Hard-drive and CPU performance will dictate how many

tracks can be recorded and played back simultaneously.

Serial number of unit reviewed: 22100873. Hardware reports as "version 000," driver software as "version 4.4," ASIO driver as "version 2.3."

Price: \$450. Word Clock Module: \$135. AEB4-1: \$150. AEB8-1: \$195. Approximate number of dealers: 22.

Manufacturer: Ingenieurbüro Müller, Goethestrasse 22, D-09648 Mittweida, Germany. US distributor: X-VISION AudioUS, 85 Wilda Avenue, Youngstown, OH 44512. Tel: (330) 629-9482. Fax: (330) 629-8054. Web: www.rme-audio.com/english.

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Additional 6dB attenuation steps are available via the driver program, and the latest version of the card offers a stepless, software-controlled volume control to make it easy to set playback level for headphones.

A full complement of digital inputs and outputs is available—TosLink optical, S/PDIF electrical, and AES/EBU electrical—with the electrical data interfaces transformer-coupled to separate the computer's noisy electrical ground from the ground of the downstream playback gear. Because of the lack of real estate on the slim card panel, the electrical I/O is via a miniature D connector; also supplied is an adapter with short flying leads terminated in RCA in-line jacks and male/female XLRs. The optical I/O can be used to send audio data to and from an 8-track ADAT M1DM recorder, and convert between ADAT and S/PDIF formats. The Digi96/8 Pro can also handle a non-audio bit-stream, such as a Dolby AC-3-encoded 5.1 soundtrack.

For monitoring while recording, the Digi96/8 Pro offers "zero latency," *ie*, no time delay, this achieved by hard-switching the digital input data to the output. The card also offers what RME calls "Enhanced Full Duplex" operation, in which simultaneous record and play-

back are possible, even if the input and output data have different sample rates!

Installation & Setup

Installing the Digi96/8 Pro was painless: Windows 98's plug'n'play wizard recognized the new hardware and installed the driver. It was then just a matter of selecting the RME card's digital I/O as the preferred Record and Playback devices in the Windows Control Panel's Multimedia menu. Every time the computer is turned on, the RME card performs a hardware self-test.

On rebooting the computer after installation, a small green icon appears on the task bar; a single click opens the card's control panel, shown in the screen shot. At the top left of the screen is a self-explanatory section for selecting the digital input. When AutoSelect is on, the card switches between its inputs every half-second, stopping when it finds a valid signal. (A red LED on the card's panel lights up until lock is obtained.) The format of the data found on the chosen input is shown at the bottom left of the display. When set to Automatic, the output monitors either the digital input or—if Play is selected on the chosen audio program—the internal data playback. (To us old guys with memories of three-head tape decks, the monitor switching is intuitive.)

Almost all the rest of the screen is devoted to output format: input or playback data; ADAT or S/PDIF formats; choices for the digital output of emphasis flag on or off, professional or consumer mode, audio or non-audio data;



RME driver software setup screen

and output status. The analog output channels can be switched between adjacent pairs of ADAT tracks, and 6dB attenuation steps are offered.

The Clock Mode menu offers the usual choices between Master or Slaved to the input word clock. With the Auto-

Measurements

As I almost exclusively used the RME Digi96/8's digital outputs to feed outboard digital processors, I first examined the card's jitter performance. To do this, I used CoolEdit 2000 to drive the card with an analytical 44.1kHz-sampled 16-bit WAV file. This consists of a high-level high-frequency tone at one quarter the sample rate (11.025kHz at -6dBFS), with the least significant bit toggled at 229Hz. The Digi96/8 Pro's digital outputs drove a Musical Fidelity X-24K D/A converter, and this unit's analog output was fed to a Miller Audio Research Jitter Analyzer, a "virtual instrument" running on a National Instruments PC card. The analyzer performs a high-resolution FFT spectral analysis on the reconstructed analog signal and searches for jitter-generated sidebands on either side of the 11.025kHz tone.

The result, using a 15' TosLink datalink, is shown in fig.1. The noise-floor components lie around the

-128dBFS level, about 3dB higher

and the overall dynamic range is 91.3dB. The overall jitter level is a low

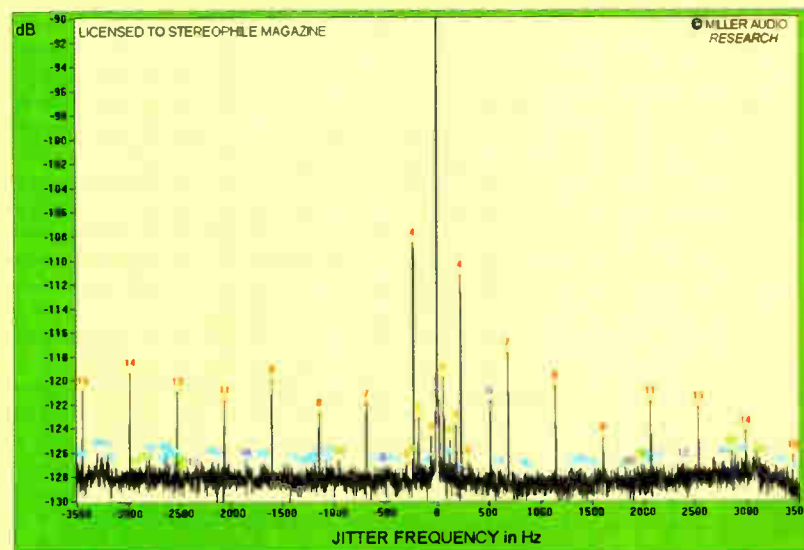


Fig.1 Musical Fidelity X-24K driven by RME Digi96/8 Pro via 15' TosLink, 44.1kHz sampling, high-resolution jitter spectrum of analog output signal (11.025kHz at -6dBFS with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range, ± 3.5 kHz.

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Sync mode activated, the Digi96 continuously searches for a valid input clock, allowing recording on the fly without having to wait for signal lock to be achieved, with software that can make use of this feature.

Associated Equipment

The RME Digi96/8 Pro was installed in a no-name Pentium MMX 166MHz with 39GB of hard drive, running Windows 98, WinAmp 2.5, and CoolEdit 2000. Comparison soundcards included an ancient Soundblaster 16 and the Digital Audio Labs CardDeluxe.

Digital source components included dCS 904, Manley, and Apogee PSX-100 A/D converters, a Mark Levinson No.31.5 CD transport, and Panasonic A-120 and California Audio Labs CL-20 DVD players for playback of commercial 24-bit/96kHz recordings. The card's digital output fed a Levinson No.30.6 or Musical Fidelity X-24K D/A processors, both 96kHz-capable. This was either direct, or via a dCS 972 upsampler or Z-Systems rdp-1 digital equalizer (updated to handle 96kHz sources) if I wanted to try some digital EQ. Digital datalinks were mainly 6' lengths of Canare 110-ohm AES/EBU cable. I also used the card to feed the optical digital input of a Yamaha @PET RP-U100 desktop

receiver (reviewed in the December 1999 *Stereophile*).

Preamp was the Mark Levinson No.380S, feeding Levinson No.33H monoblock power amplifiers via Madrigal CZ Gel-1 balanced interconnects. I also used CZ Gel-1 to connect the No.30.6 to the preamp, while the Digi96/8 Pro's analog outputs were connected to the preamp via Canare unbalanced interconnect with a RadioShack TRS-to-twin-RCA adapter.

Loudspeakers were mainly B&W Silver Signatures, with Mirage MRM-1s, Dunlavy SC-IV/As, Dynaudio Contour 1.3 Mk.IIs, Joseph Audio RM7si Signatures, and Thiel PCSEs seeing service. Speaker cables were variously AudioQuest Sterling and CV-4, Goertz AG3 Divinity, Symo, and Cardas Cross. Main headphones were Stax Lambda Pros with SRM-T1S tube amplifier, fed from the preamp, though I also used Sennheiser HD-580s and Sony MDR-7506es.

A PS Audio Power Plant 300 fed AC at 90Hz to the preamps only, with everything else (other than the power amps) plugged into Audio Power Industries 116 Mk.II and PE-1 AC line conditioners.

Sound

For nearly the entire year that I used the Digi96/8 Pro before writing this review,

I used its digital inputs and outputs almost exclusively. Generally I fed its AES/EBU output to the Mark Levinson No.30.6 D/A processor. Throughout this period, the RME card worked flawlessly in this mode, whether I was recording to hard drive using CoolEdit 2000, or playing back the resultant WAV files. I made use of material with four sample rates—44.1kHz, 48kHz, 88.2kHz, and 96kHz—and again, the RME card worked without incident. Checking its data integrity with a PrismSound DScope II revealed that it was transparent, *ie*, the data stored on the hard drive and sent to its output were the same as it had received via its input. (This is not necessarily the case with some cards, I am told.)

I am generally not a big fan of TosLink data connections; their limited bandwidth, compared with ST-optical or AES/EBU, usually introduces data-related jitter. (See Malcolm Omar Hawksford and Chris Dunn's AES paper, "Is the AES/EBU Interface Flawed?," reprinted as "Bits is Bits?" in the March 1996 *Stereophile*.) But to my surprise, although I was hard-pressed to hear any difference at all between the RME's optical output and the AES/EBU output with the big Levinson processor, the TosLink sounded smoother in the high frequencies, less

Measurements

248 picoseconds peak-peak. Although some power-supply-related sidebands

can be seen in this graph at $\pm 60\text{Hz}$ and $\pm 180\text{Hz}$ (indicated with brown

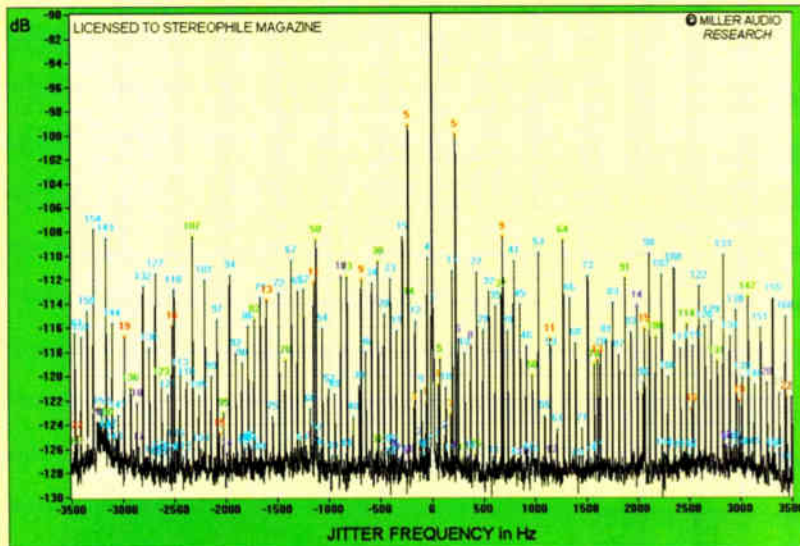


Fig.2 Musical Fidelity X-24K driven by RME Digi96/8 Pro via 6' Illuminati electrical S/PDIF datalink, 44.1kHz sampling, high-resolution jitter spectrum of analog output signal (11.025kHz at -6dBFS with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range, $\pm 3.5\text{kHz}$.

numeric "2" and "3" markers), most of the jitter comes from the strong sideband pair at $\pm 229\text{Hz}$ (red "4").

Replacing the TosLink S/PDIF connection with a 6' length of Illuminati 75-ohm electrical datalink gave the spectrum shown in fig.2. The jitter level has increased to a still-good 686ps. The 229Hz sidebands have risen from 187ps to 610ps, while the high-frequency harmonics of 229Hz have also risen in level. High-level sidebands related to the subcode frequency make an appearance (indicated with green numeric markers), but so do a large number of spurious tones (blue markers). As a result, the dynamic range has decreased to 73.2dB. Replacing the Illuminati S/PDIF link with AudioQuest Digi Pro gave the same result.

This behavior surprised me, as the RME's electrical data outputs are specified as being isolated by pulse transformers. I would have thought that these would have minimized the effect

grainy, than an electrical S/PDIF connection with the inexpensive Musical Fidelity X-24K. In fact, auditioning some of my hi-rez piano masters, I would dare to suggest that 44.1kHz TosLink sounded smoother than 88.2kHz electrical. Heresy, I know.

I occasionally used dynamic headphones plugged into the Digi96/8's TRS jack to monitor what was going onto tape... er, hard drive. Either via headphones or taking the unbalanced outputs

to the system preamp and listening over speakers, there was a hashy quality to the sound that I found fatiguing. Piano sounded too clangorous, vocals a bit grainy. Not for me, I'm afraid. The RME's analog outputs are not in the same class as those of the CardDeluxe's. For serious use I'd recommend treating the RME as a digital I/O unit.

RME's documentation for the Digi96/8 Pro is excellent, by the way, and goes into good detail on the various prob-

lems that have been encountered with different operating systems and programs.

Summing Up

At \$450, the RME Digi96/8 Pro offers an excellent way of getting digital 24/96 audio data in and out of your computer, be it Mac or PC. Its analog outputs are okay for informal monitoring, but for the best, true high-end sound quality, you should feed the RME's TosLink or AES/EBU data out-

Measurements

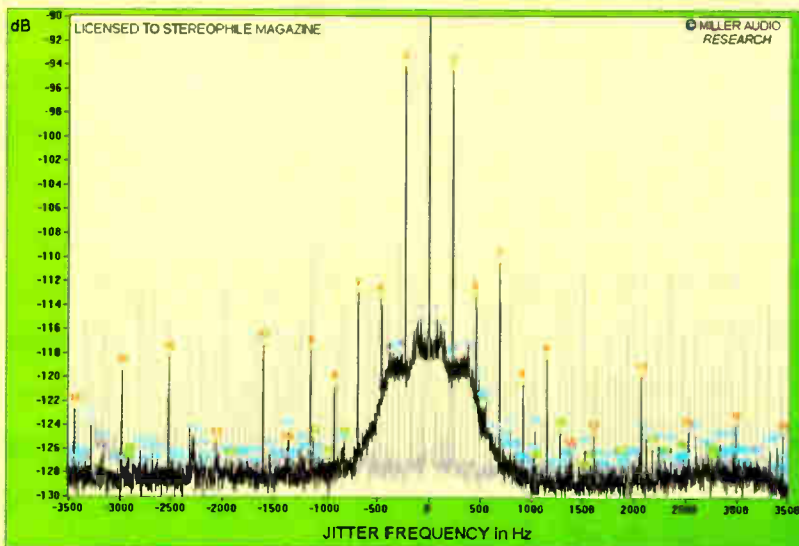


Fig.3 Musical Fidelity X-24K driven by RME Digi96/8 Pro via 6' Illuminati, Meridian 518 digital processor, and 1m AudioQuest Digi Pro electrical S/PDIF datalinks, 44.1kHz sampling, high-resolution jitter spectrum of analog output signal (11.025kHz at -6dBFS with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range, ± 3.5 kHz. Grayed-out trace is the same as fig.2, without Meridian or AudioQuest.

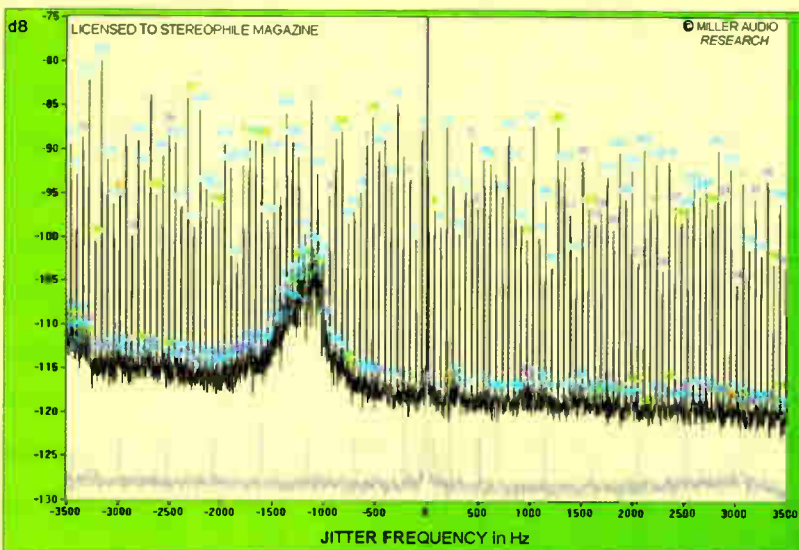


Fig.4 RME Digi96/8 Pro, 44.1kHz sampling, high-resolution jitter spectrum of analog output signal (11.025kHz at -6dBFS with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range, ± 3.5 kHz. Grayed-out trace is the same as fig.1.

on the datastream of any electrical interference from the hostile PC environment. Inserting a Meridian 518 digital processor in the datastream eliminated all the spurious noise spikes in the Musical Fidelity's analog output (fig.3), at the expense of increasing the level of the 229Hz sidebands and imposing the Meridian's characteristic rise in the reconstructed signal's noise floor around the fundamental. The dynamic range improved to 83.6dB — note the 1dB drop in the random analog noise-floor components — but the jitter now measured 1152ps.

Fearing the worst, I connected one of the RME's analog outputs to the Jitter Analyzer. The result is shown in fig.4: The jitter is a very high 3974ps (3.97ns), and while data-related sidebands are conspicuous by their virtual absence, there are many other jitter-related sideband pairs visible (purple and green markers). Not only are there many spurious tones (blue markers), but the analog noise floor is, on average, around 12dB higher than that of the outboard Musical Fidelity processor. (Note the expanded scale in this graph compared with figs.1-3.)

Turning to more traditional measurements of analog output (using WAV files played by CoolEdit 2000 as the test signals), the Digi96/8's maximum level was 2.45V, exactly 10dB above the reference 1dBu level. Pushing in the external button dropped this level to 611mV (-4.3dBV). The source impedance was a low 82 ohms across the audioband, and the card appeared to drive 600-ohm loads with no problems. The absolute polarity was non-inverting. The frequency response at -12dBFS was identical with or without pre-emphasis (fig.5), though some pass-band ripples can be seen. (These ripples are typical of Philips D/A converters and digital low-pass filters, though I

puts to a standalone D/A processor.

Do I prefer it to the \$595 CardDeluxe from Digital Audio Labs, which I reviewed in September? That's a hard one. Each card can be used as the basis for a multitrack digital audio workstation, the CardDeluxe using internal card-to-card jumpers, the German card by daisy-chaining the digital data output of one card to the digital data input of the next. (I believe the RME needs to be used with its \$135 Word Clock

Module for the best results.)

As you can read in this issue's Follow-Up, I had some compatibility problems with the CardDeluxe's S/PDIF data output and one of the processors I routinely use. The RME's S/PDIF and AES/EBU outputs, however, proved perfectly reliable with everything. And, to my surprise, the TosLink output sounded best with the less expensive D/A processor.

The extra \$145 for the CardDeluxe buys you two excellent balanced-input

A/D converters and two even-higher-resolution balanced-output D/A converters. On the other hand, the RME comes bundled with a very useful audio utility program, and can have four balanced analog inputs added for just \$150.

As I said, a hard choice. I've chosen not to choose by having both installed in my PC. However, if you use a Mac or work with ADAT machines, or prefer to work with external A/D converters, the RME should get your nod. ☒

don't actually know that the RMS uses these.) Channel separation at 1kHz (not shown) was respectable at 95dB (L-R) and 87dB (R-L), though these

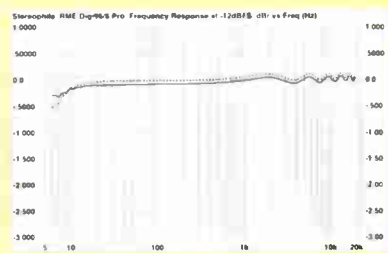


Fig.5 RME Digi96/8 Pro, D/A frequency response at -12dBFS with 44.1kHz sampling (right channel dashed, 2dB/vertical div.).

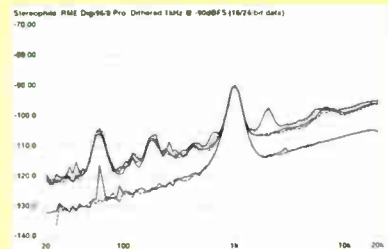


Fig.6 RME Digi96/8 Pro, D/A 1/2-octave spectrum of dithered 1kHz tone at -90dBFS, with noise and spurs, 16-bit (top) and 24-bit (middle) data, 44.1kHz sampling. Bottom traces are the Digital Audio Labs CardDeluxe driven with 16-bit data. (Right channel dashed.)

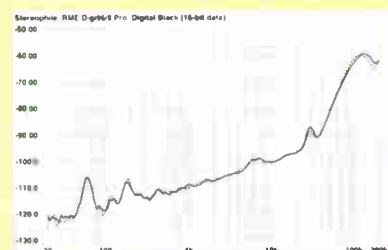


Fig.7 RME Digi96/8 Pro, D/A 1/2-octave spectrum of digital black with noise and spurs, 16-bit data (right channel dashed).

figures degraded at 6dB/octave with increasing frequency, due to capacitive coupling between the channels.

Fig.6 shows spectral analyses of the Digi96/8 decoding dithered 16-bit data representing a 1kHz tone at -90dB with 16- and 24-bit resolution, as well as (for reference) the spectrum of the CardDeluxe's analog output fed with the same 16-bit data. With 16-bit data (top pair of traces), the RME card produces some second harmonic, and features an analog noise floor some 10dB higher than that of the CardDeluxe under the same conditions (bottom traces). Some power-supply spurs can also be seen at 60Hz and 180Hz. Increasing the word length to 24 bits (middle traces) eliminates the second harmonic from the spectrum,

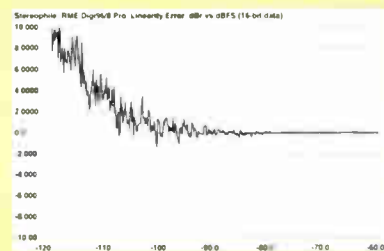


Fig.8 RME Digi96/8 Pro, left-channel D/A departure from linearity, 16-bit data (2dB/vertical div.).

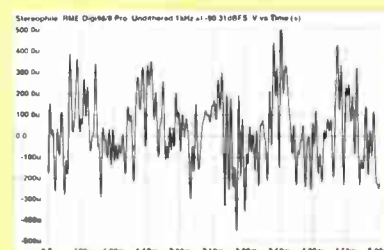


Fig.9 RME Digi96/8 Pro, D/A waveform of undithered 1kHz sine wave at -90.31dBFS, 16-bit data.

but drops the analog noise floor by only about 1dB.

Performing a similar spectral analysis, but with the measurement bandwidth increased to 200kHz and the card's D/A converters driven with digital "black," gave the traces shown in fig.7. The audioband noise floor remains as high as it was in fig.6, but a large ultrasonic peak can be seen, due to the noiseshaping used to maximize the bitstream DAC's resolution. (Note that the slight peak at 30kHz is almost certainly due to the card picking up radiated RF from the computer monitor.)

This DAC offers basically good linearity down to just below -100dBFS (fig.8), but its reproduction of an undithered 1kHz waveform at -90.31dBFS, which should appear as three distinct voltage levels (see fig.5 of the CardDeluxe review in the September *Stereophile*, p.75), is obscured by high-frequency noise (fig.9). Finally, the analog output offered low levels of harmonic distortion, even into the demanding 600-ohm load (fig.10), while intermodulation distortion (not shown) was also low. —John Atkinson

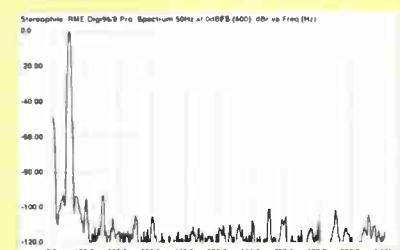


Fig.10 RME Digi96/8 Pro, D/A spectrum of 50Hz sine wave, DC-1kHz, at 0dBFS into 600 ohms (linear frequency scale).

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RME DIGICheck Software

Included free with the RME Digi96/8 Pro soundcard is DIGICheck, a useful utility program. This will run only with an RME Digi96-series card installed in the computer (PCs only, apparently). When you feed a datastream into the soundcard's digital input, running DIGICheck allows you to look at level (two-channel or multichannel), channel correlation, the bit depth and bit usage within the datastream's subframes, and what information is carried by the datastream's subcode. DIGICheck also tests the performance of the Digi96/8 and the host computer by logging the time to write 128k bits of data 500 times to the hardware's memory and calculating the corresponding transfer rate in MB/s.

Fig.1 shows a typical two-channel level-meter screen. The vertical scale of the meter can be set anywhere down to -140dBFS, and each channel is displayed both as RMS level (outside bars) and peak (inside bars), with a peak-hold function. The top 10dB are displayed in red (this is under user control), and the actual level, to one decimal place, is shown on top of each bar. The meter ballistics are also under user control, as is the number of consecutive 0dBFS samples needed to indicate a digital "Over." All 24 bits are used to calculate level, and the meter data are high-pass-filtered to eliminate the effect of any residual DC offset (very common in ADCs, I've found). The level indication is therefore accurate down to very low levels.

Note the horizontal display under the level bars, which shows the correlation between the stereo channels, or between any two consecutive pairs of an ADAT's eight channels. A reading of "1" indicates that the two channels are the same, while "-1" reveals that the channels are out of phase. I found this function most useful as a check on microphone phasing/polarity and mono compatibility.

If you remember my tirade in the December 1999 "As We See It," about the limited dynamic range of modern

rock recordings, the meter display in fig.1 shows a typical passage from the boxed set released to celebrate the 30th anniversary of Jimi Hendrix's death. Compressed dynamics is hardly a "modern" problem: the peak/mean ratio of this passage is just 7dB, while the correlation meter shows almost no difference between the channels.

Fig.2 shows a self-explanatory channel-status display, taken from a 96kHz recording played back on a Nagra-D via a dCS 972 used to convert the dual-AES/EBU data format to a single double-speed AES/EBU datastream. The data are marked as "Audio" (as opposed to, for example, a Dolby AC-3 datastream) and "Professional," and are "Valid"; i.e., the source hasn't flagged any data as having been interpolated. (In the case of CD sources, the actual track

number, index, and play time of the invalid data are shown in this field; in the case of a DAT source, the Start-ID is shown.) The source of the data, either the original A/D converter or the format converter used, is correctly indicated as being a dCS. Note that each subframe is identified as having a sample rate of 48kHz, but that the actual sample rate, displayed on the bottom line, is 96.0kHz. (DIGICheck calculates the real sample rate with an

accuracy of ± 100 Hz.) When the source is a CD, copyright and SCMS information are listed, as well as the timebase error category.

Fig.3 shows two typical DIGICheck bit-statistics screens. The left screen is derived from a CD. The four LSBs

below the 16th bit are marked blue to indicate "permanent zero, not used," as are the four auxiliary data bits and the User bit. The Channel Status and Validity bits should both normally be green; in this display, however, for some reason the data output of the Mark Levinson transport sets the channel-status bit to red, "permanent 1."

As expected, there are 16 valid audio bits from CD playback, these shown in green, with an asterisk revealing that the bit has changed within the past

100ms. As an asterisk doesn't appear on one of the bits, it indicates that the bit has "hung," or — particularly for the eight bits below the 16th —

what the real used word length is. For example, although the California Audio Labs DVD-20 player plays DVD-Video discs with 24-bit audio tracks, DIGICheck showed that the four "Aux" bits in its digital output remained asterisk-free blue, revealing that the player's digital output truncated the 24-bit data to 20 bits.

For comparison, the right screen in fig.3 shows the bit statistics for the Nagra-D's data output. All 24-bit audio bits can be seen to be active by the green color and the asterisks, with the four least significant bits, 21 through 24, packed into the "Aux" sub-subframe.

If, like me, you need to know what is happening in the digital datastream as well as just listen to it, DIGICheck is an essential tool, and well worth the price of the Digi96/8 card. That it is included free of charge with the card goes a long way toward making the RME a recommended component.

—John Atkinson

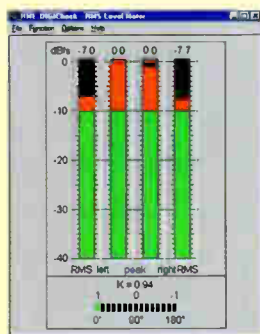


Fig.1 RME DIGICheck, typical 2-channel level-meter display.

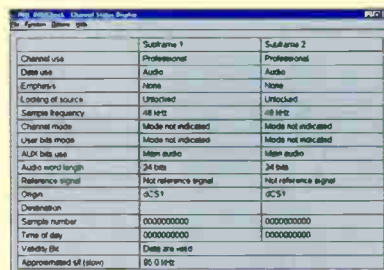


Fig.2 RME DIGICheck, 96kHz channel-status display.

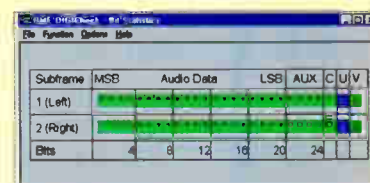
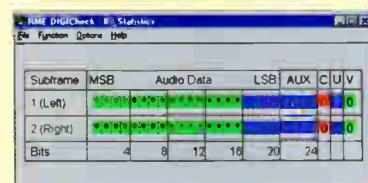


Fig.3 RME DIGICheck, bit-statistics display with it CD datastream (left) and 24-bit datastream from Nagra-D (right).

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PolyCrystal equipment racks, Isolator footers & Cable Towers

Setup, setup, setup... you just can't get away from it. It's the sharp edge of the other side of the high-end sword — you know, the one that cuts both ways. Audiophiles actually become *more* frustrated as they increase the quality of their systems. Up the resolution — where's Abbie Hoffman when you need him? — and sonic warts previously obscured become all too evident. And so the process continues. Endlessly. I run into this all the time.

But take hope — the setup struggle is worth it. Higher system resolution is a worthy goal that audiophiles should strive for, he said, trying not to preach. I'll continue writing about basic setup issues each month in "Fine Tunes." But not every audiophile is DIY-inclined. (If you're like me, you're *reclined* most of the time!) So if you prefer to buy instead of making it yourself, you might think about the PolyCrystal racks and Isolator systems from California manufacturer Innovative Audio — not to be confused with Brooklyn and Manhattan high-end dealer Innovative Audio — with which I have much experience.

What is it?

Innovative Audio's Chief Crystal, Bruce Bodlak, was quick to tell me what PolyCrystal is *not*: "It's not MDF! And it's not Corian or plastic, and the material



PolyCrystal equipment racks

doesn't ring like a bell, like metal does."

Bodlak takes his composite resins seriously. During three and a half years of auditioning all types of materials, PolyCrystal proved to be the formulation of ingredients that *didn't* ring his bell. "We tried plastics, epoxy and resin composites of crushed pecan and walnut shells, coal slag — all kinds of stuff — and discovered even *resins* had different acoustic damping properties."

PolyCrystal is a composite of numerous inert organic materials (such as marble) crushed down to individual crystals and embedded in a resin matrix. "The result is a high-density material with extremely irregular boundaries between the interlaced crystals so that resonant energy effectively dissipates within the PolyCrystal matrix. It turns energy to heat — but don't worry, your shelves won't get hot!" It's dense, heavy stuff; if you give it the ol' knuckle-rap test, you'll hurt yourself.

There are two kinds of PolyCrystal. The less expensive, High Density (HD) variety is the result of a single cycle of crushing the component materials, suspending them in resin, and curing the mix. The more costly Ultra High Density (UHD) version results from *two* crush cycles before the suspend-and-cure process. "It kinda looks like flour after the first crush," Chef Bodlak elucidated. UHD shelves look like speckled, polished black

granite that (thankfully) doesn't show dust. (UHD shelves are more of a solid black.) If you scratch a shelf, which I've done a couple of times, just cover it up with a component — or, if you're retentive, sand out the blenish with 1000-grit paper and use something like Turtle Wax to remove it completely.

PolyCrystal can be cast in a variety of shapes and sizes. From Innovative Audio's 6000-square-foot factory in Woodland, California, Bodlak and his five employees turn out nicely finished wood-frame racks with PolyCrystal shelves, Isolation Platforms, and Dissipates and Dissiblocks (anti-resonance devices that sit on top of components), in both HD and UHD. They also make speaker stands, Cable Towers (for suspending cables off the floor), and several sizes of Isolator footers and PolyCrystal-coated brass spikes for speakers and very heavy components. There are several

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\$34.95/each, \$99.95/three. Approximate number of dealers: 17.

Manufacturer: Innovative Audio, Folsom, CA 95630. E-mail: info@polycrystal.com. Web: www.polycrystal.com. Distributor: Ultra Systems, One Walter Lane, #570, Point Pleasant, PA 18950. Tel: (800) 724-3305, 215-297-0227. Fax: (215) 297-8661. E-mail: ultra@p3.net.



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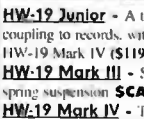
VPI Turntables & Record Cleaners



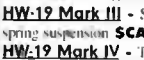
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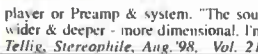
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speaker stands, but I haven't tried them.

The handsome and contemporary-looking racks are of all-natural hardwoods (no MDF, veneers, or plywoods) in what PolyCrystal calls a "highly evolved furniture design." Natural, unstained, or high-gloss black oak are standard finishes. At additional cost you can order the stands in a wide variety of custom hardwoods, from alder to zebrawood.

The rack design was upgraded a while back for better rigidity; it's now apparently seven times stronger than before. A new edge treatment for the top shelf visually matches the Isolation Platforms. UHI shelves are all 1" thick, while HI shelves are still 3/4". Rack shelves of either material have a curved cutout at their corners on one side that fills the space between the frame for a more finished look. Each rack comes with four PolyCrystal-coated brass spikes.

There are three standard rack heights: 18" with two shelves, and 31" and 42" racks with three shelves. Each can support extra shelves within, and the 42" model gets a third cross-brace to keep its rigidity up to snuff. PolyCrystal shelves come standard at 15" deep, with 19" available at extra cost. Frames can be made to custom heights at—you guessed it—additional cost.

The 1 1/2"-thick Isolation Platforms are very effective—we've got a bunch of them scattered around the loft, supporting various power amplifiers. Although you can drop an amp onto a rack, I've always found them to perform their best on their own footered Isolation Platforms placed behind or between the speakers. A wide variety of IP sizes is available, from 13" by 10" to 21" by 28".

Solid PolyCrystal Isolator footers, of which I have a huge pile, come in Standard and Reference sizes. You can't *always* tell which size will be best, so it pays to experiment. I usually pop three under any particular component; remember, three points define a plane, a tripod is inherently stable. For *rilly* big amps or speakers, PolyCrystal-coated Brass Spikes are best. These come in three sizes, each with a 1/4-20 threaded insert, the size used by most speaker manufacturers. For other thread types there's the Multistud, with a 1/4-20 thread for the Spike and a choice of six thread sizes on the other end. Speaker Discs are also available to avoid damaging your precious floors.

Cable Towers look like big, upside-down molars! Made of a ceramic material filled and coated with PolyCrystal, they support and isolate audio cables from the "electromechanical grunge on the floor," Bodlak says, "which results

from vibration and static electricity." They're unique in incorporating an "electromagnetic shielding treatment" that "effectively creates a barrier between electrical energy below the tower and the cable sitting above." Comments? Comments? No comments.

The PolyCrystal racks are "pleasingly graphic," according to K-10. They don't give an impression of overbearing mass, and don't take up a huge amount of floor space. The racks arrive in a flat box but take only minutes to set up. The instructions are good; even an all-thumbs audiophile like me experienced minimal difficulty.


You can adjust the PolyCrystal shelves within their frames without having to disassemble the rack, and the spiked top shelves can be individually leveled. Interior shelves are suspended at their four corners by brass pins set into holes on the inside frame. The pins are rated at 110 lbs each, so it takes a monster component to bring a rack crashing down. They're heavy, though; changing shelf height is definitely a two-person job.

What's PolyCrystal sound like?

While Bruce Bodlak advocates using PolyCrystal throughout the system, I'm an eclectic guy who, to get the best results, prefers mixing various footers and even shelves on the PolyCrystal supports. However, certain PolyConclusions can be drawn.

PolyCrystal seems to do just what's claimed: It *sounds* very much like a low-energy-storage medium, neither adding nor subtracting anything of its own "voice" to the component placed upon it. PolyCrystal racks, Isolation Platforms, and footers tightened up the sounds of a wide variety of equipment, the improvements often most noticeable in the bass. Imaging and focus usually improved, as did the interstitial quiet, which raised the level of overall palpability, air, and transparency. Sometimes I could squeeze out a smidgen better performance with another type or brand of footer under a particular component, but I seldom met a component that didn't like PolyCrystal.

It's a PolyCrystal world

Good sound is the result of lots of attention to the many small details of system setup. While I can't claim that just popping in a set of PolyCrystal Racks or Cable Towers will turn a dog of a system into the Second Coming, it will, as part of an overall strategy of resonance control, raise your system's level of performance and help it to sound its very best. Highly recommended. 

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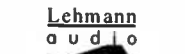
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VAC Avatar integrated amplifier

When we left the VAC Avatar¹ back in the April 2000 issue, it was being put through its paces on Thomas J. Norton's test bench. Tom had already observed curious behavior from the right channel's 4 ohm output transformer tap in Ultralinear mode when, just as he concluded his basic measurements, the Avatar gave up the ghost. The preamp section was dead, the right channel worked only intermittently, and the amp shut down if he tried to get more than 5W from the right channel in Ultralinear or Triode mode. While the left channel worked fine in both modes, it did so only when fed from the Home Theater Direct input. Thus, the "Measurements" sidebar of the review concluded with an incomplete assessment of this lush-sounding integrated amp.

As reported in my original review, I'd experienced intermittent problems with output and driver tubes and a series of blown fuses. John Atkinson suspected a wiring or tube problem connected with the right-channel UL/Triode switching function and the right-channel output transformer's 4 ohm output tap.

When the Avatar was returned to VAC, designer Kevin Hayes gave it a once-over before returning it to us for this Follow-Up. He wrote to *Stereophile*: "Our examination of Chip's review sample showed one bad output tube and the demise of the associated screen resistor. These two items have been replaced. No other fault was found. No other change has been made. This is the state in which the amplifier will be returned for Follow-Up.

"Now, how could the screen resistor fail? A runaway tube or an arc in an output tube can damage the screen resistor (so would a badly mis-biased tube, but such was not the case here). However, it is exceedingly rare — albeit not impossible — for a single such event to take out the resistor. This is because the part is a wire-wound resistor, specifically chosen



VAC Avatar integrated amplifier

for its ability to withstand high-voltage pulses. It is therefore likely that the EL34 was defective for a period of time, causing the protection fuse to blow more than once, each time weakening the screen resistor a bit."

Ah, yes: The butler did it. On receiving the Avatar back for another go-round, I was especially conscious of the behavior of the four EL34 output tubes, and kept an eye out for any hints that one might be wavering.

On the VAC Avatar, tube biasing is accomplished by removing the milled faceplate, pressing a button for each tube, and using a rotary trim pot to center at midnight the arrow on the circular, illuminated, Marantz-style meter in the middle of the front panel. I anticipated some initial drift from spec as a result of shipping, and sure enough, during initial setup and bias, tube #3 seemed to be still settling in, exhibiting some noise artifacts as if it were clearing its throat or burning off some oxide effluvia.

That first evening I returned again and again to the bias controls, as the behavior of this tube seemingly affected that of the others. I left the Avatar on overnight, and by late next morning it had settled in. I tapped tube #3 with a pencil eraser, and there was no evi-

dence of any untoward microphonic effects, nor was there with any of the other tubes. The bias, too, had settled in; it remained stable over the next few weeks, requiring little tweaking. During that time I left it running for long periods, after which I would power the unit down and turn it on again. I experienced no blown fuses or extraneous tube noise, although the character of the Avatar's actual noise floor with the volume control set above the midnight setting, with no signal, in both the CD and phono modes, did give me pause.

The background noise grew louder as I advanced the control past midnight toward full power, sounding in CD mode like a grounding hum, and in phono mode like hashy surf. However, given the Avatar's high voltage gain — TJN measured a maximum of 35dB — 11 o'clock was the loudest I ever cranked the system, and that was plenty loud, plenty clear, and safely below the audible noise range. Nevertheless, that sense of aural combustion — of a revved-up race car running right up to the edge of its performance limits — made me reconsider my automotive metaphors. While the Avatar's appearance projected the elegance of a Rolls-Royce, its sound had the nitro-

¹ The Avatar costs \$3490, with remote control of Volume and Mute adding \$390. Valve Amplification Company, 807 Bacon Street, Durham, NC 27703. Tel: (919) 596-1107. Fax: (919) 596-2037. Web: www.vac-amps.com.

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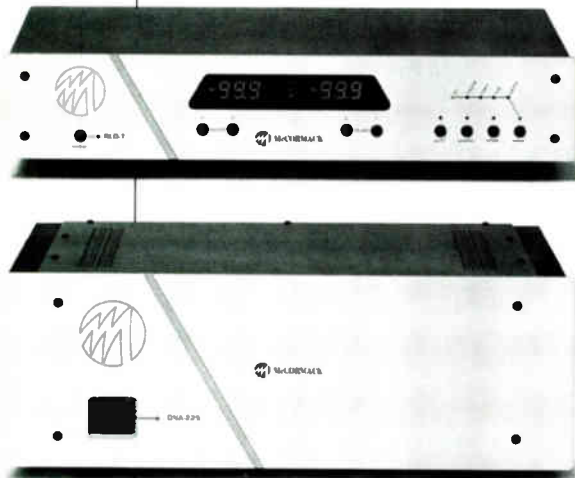
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methane burning guts of a souped-up Pontiac GTO.

But the Avatar was no hot-rod jalopy with the front-side passenger seat ripped out; there was still a surfeit of rich Corinthian leather in the interior, and she comes with all the appointments. Last time out, I teamed the Avatar with the 4 ohm Celestion A3 speakers and went back and forth between Triode and Ultralinear mode. This time I drove the Joseph Audio RM7si's with the Avatar in 60W Ultralinear mode, which, I concluded, was the Avatar's strong suit. Last time, I ran 20' biwire lengths of Straight Wire Serenade speaker cable; this time, I used 8' biwires composed of Synergistic Research Resolution Reference Mk.II for the bass, and SR's Designer's Reference for the highs (above 2kHz for the two-way Josephs). Instead of the Straight Wire Serenade interconnects, I employed 15' of Synergistic Research Resolution Reference Mk.II interconnects (with Discrete Shielding only) from the Sony SCD-777ES SACD player to the CD inputs. Finally, I ran a Synergistic Research Designer's Reference² AC Master Coupler into a JPS Power AC Outlet Center (with a 20'/8-gauge run to my dedicated line).

The sound was every bit as intoxicating and involving as I recall from my first cohabitation with the Avatar: a sweet, rich, open presentation with plenty of air and juicy midrange detailing. I listened to a number of sources, but for convenience's sake returned for final evaluations to *Not Two, Not One* (ECM 1670), a magnificent and varied recital featuring pianist Paul Bley, bassist Gary Peacock, and drummer Paul Motian. While my usual Mesa Tigris in its 1/3-triode/2/3-pentode mode (28W) has extraordinary bass slam, tonal warmth and dynamic immediacy, I was struck anew by the weight and *speed* of the Avatar's bass resolution, and its natural tonal balance from top to bottom. On the dancing "Fig Foot," the Avatar kept everything in tempo, crisply delineating the finer aspects of Peacock's tone without neglecting rhythm and pacing.

The overall resolution and soundstaging were quite

good; I experienced a very strong sense of image placement, and of the holographic shape of the drum set and piano within the soundstage. Bley's piano and Motian's drums not only sounded vivid and lifelike, they "looked" like three-dimensional images. I loved the air and detailing of Motian's shimmering, siz-

The sound was every bit as intoxicating and involving as I recall from my first cohabitation with the Avatar: a sweet, rich, open presentation with plenty of air and juicy midrange detailing.

zling cymbals, and when he brought up his bass drum for a big accent during his solo, it spoke with a perfect combination of timbre and physical immediacy, without any murky colorations. It spoke like a bell.

I'm still quite taken with the sound signature of the Avatar. Some folks might find it a bit on the bright side, and, when pushed past its limits, it did have a

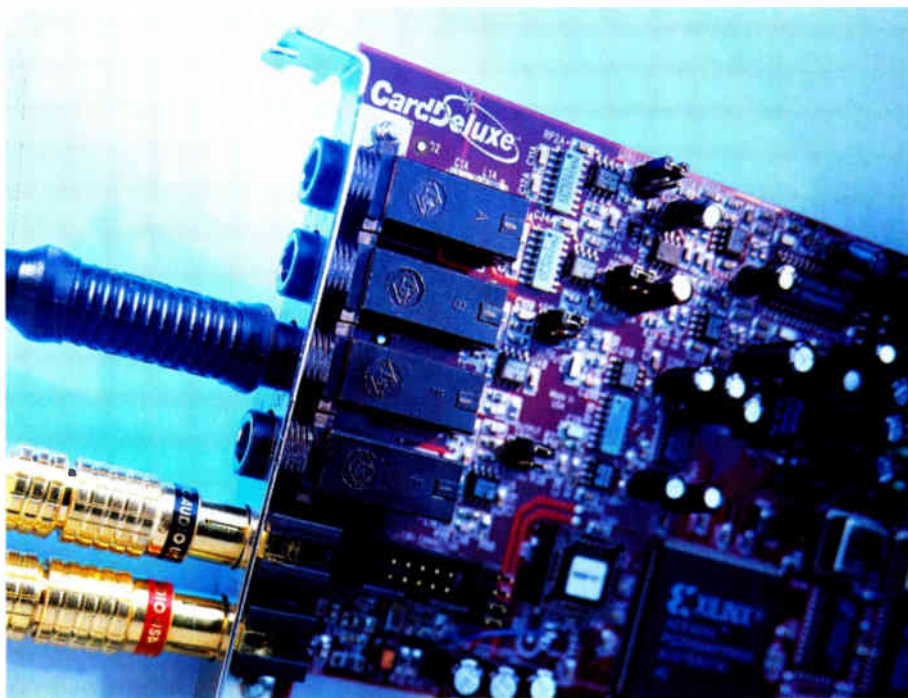
touch of strain in the upper midrange. I thought it sounded splendid with the brilliant, ultra-revealing RM7si, but I suggest that when you audition it, you begin with some warm-sounding speakers and work your way up to the more analytical. Still, I didn't find it hard, but lively and musical; if you don't need that much power or bass control, and if you want to back off on the highs, you might prefer to run it at 28W triode.

The Avatar costs roughly a grand more than the Manley Stingray or the Mesa Tigris, but it also has a very nice phono section. While I still wish VAC had provided a true preamp out rather than that Home Theater Direct mode (for integrating with a 5.1-channel surround system), if you go for that distinctive sound signature, you'll go for the whole jizzombie. The Avatar enlivened my experience of music. — Chip Stern

Digital Audio Labs CardDeluxe PC soundcard

In my September 2000 review of this high-performance 24-bit/96kHz PCI-bus soundcard (p.70)¹ I described my positive impressions of its analog inputs and outputs. I had used the card's RCA S/PDIF

¹ The CardDeluxe costs \$595. Digital Audio Labs, 13705 26th Avenue N, Suite 102, Plymouth, MN 55441. Tel: (612) 559-9098. Fax: (612) 559-0124. Web: www.digitalaudio.com.



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digital input to transfer both CD and 24/88.2/96 music data to my computer's hard drives as WAV files. I also performed almost all my auditioning of the CardDeluxe's S/PDIF data output using it to feed the mighty Mark Levinson No.30.6 D/A processor. However, late in the day I specifically compared the card's analog outputs and an inexpensive Musical Fidelity X-24K processor, which I reviewed in the February 1999 issue of *Stereophile*.

Something that I did not have time to explore for the September review was the fact that the Musical Fidelity processor wouldn't always lift its mute when driven by the card's data output, even when the unit's Lock LED lit up. This happened only with 44.1kHz-sampled data; 88.2kHz and 96kHz WAV files sounded perfectly normal. Passing the CardDeluxe's output datastream through a relocking device such as the dCS 972 or Meridian 518 made everything work normally, but

from its S/PDIF output. Although the Musical Fidelity worked fine in this condition when fed 96kHz and 88.2kHz data by the CardDeluxe, it still performed spasmodically with 44.1kHz data. I used the CardDeluxe's setup utility to set its data output to both Consumer and Professional modes (the latter illuminating the AES/EBU LED on the Levinson's front panel), with no difference in the X-24K's behavior.

The second thing to be investigated was whether there was something wrong with the Musical Fidelity. The X-24K has what appears to be a standard data-receiver circuit based on a Crystal CS8414 chip, and it did lock on to and decode every other 44.1k source I had handy, including the jittery RadioShack CD-3400 portable CD player. However, the other two D/A processors I had—an Assemblage DAC-1, which uses Crystal's older CS8412 data receiver chip, and a PS Audio Ultralink, which uses an obsolete Yamaha chip—successfully

facturers' Comments," Al Pickard of Digital Audio Labs conjectures that this was due to my slaving the card's S/PDIF input to an external data source, and that using the CardDeluxe to decode a WAV file of the same data on the computer's hard drive would produce better results. However, the graph printed in the magazine was produced from a WAV file with the CardDeluxe set to operate as the master clock. I did use an external CD transport but only to check these results. (The only changes were an increase in the level of the $\pm 229\text{Hz}$ data-related sidebands from 47ps to 118ps and the introduction of a strong pair of jitter sidebands at $\pm 15\text{Hz}$.)

But checking this measurement reminded me that I had not looked at the effect of jitter on the card's S/PDIF output. I therefore fed the datastream to the X-24K with a 1m length of AudioQuest DigiPro coax and, on one of the occasions when the processor's mute lifted, performed a narrow-band

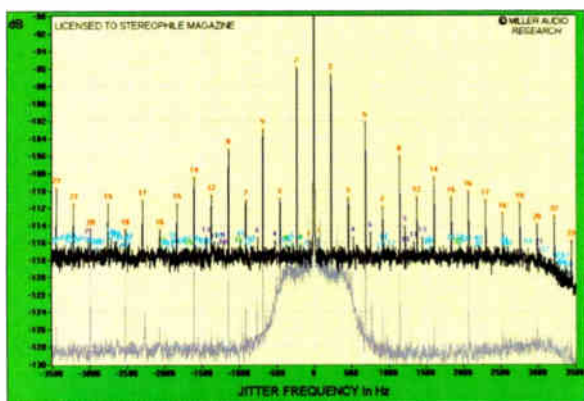


Fig.1 Musical Fidelity X-24K driven by CardDeluxe via 1m of AudioQuest Digi Pro S/PDIF link, high-resolution jitter spectrum of analog output signal (11.025kHz at -6dBFS with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range, $\pm 3.5\text{kHz}$. Grayed-out trace is via Meridian 518 set to Bypass and 2m of Illuminati S/PDIF cable.

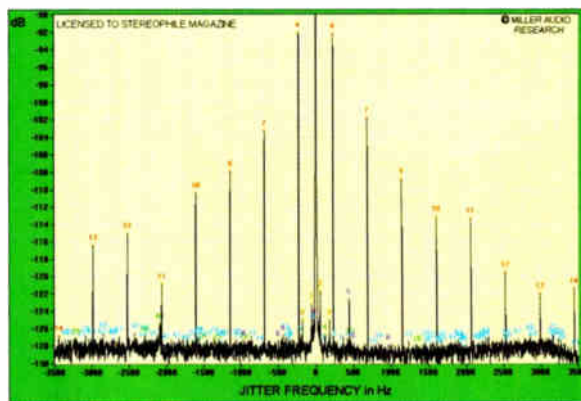


Fig.2 Musical Fidelity X-24K driven by CardDeluxe via Sonic Frontiers UltraJitterbug, 1m of AudioQuest Digi Pro S/PDIF link, and 2m of Illuminati S/PDIF cable, high-resolution jitter spectrum of analog output signal (11.025kHz at -6dBFS with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range, $\pm 3.5\text{kHz}$.

this was obviously something that needed investigation.

The first thing I suspected was that, as the computer was also the host for the RME Digi96/8 Pro soundcard that I review elsewhere in this issue, there might be some interference between the two cards' clocks when set to the same sample rate. (Such interference between nonsynchronous clocks set to nominally the same frequency had been a degrading factor with the Apogee PSX-100 reviewed by Michael Fremer last June.) I therefore slaved the RME card to a 96kHz data source while using the CardDeluxe to output 44.1kHz data

worked with the CardDeluxe's 44.1kHz S/PDIF data output. So it's possible that the Musical Fidelity D/A processor was at fault by being exceptionally sensitive to the quality of the 44.1kHz datastream with which it is fed—but, peculiarly, not with datastreams at other sample rates.

In my original review of the CardDeluxe, I noted that although the level of jitter-related artifacts in its analog output while decoding 44.1kHz data was respectably low at 552 picoseconds peak-peak, the noise floor did feature many narrow noise spikes (September, p.75). In this issue's "Manu-

spectral analysis of the processor's analog output using the Miller Audio Research Jitter Analyzer. Source data was the same hard-drive 16-bit, 44.1kHz WAV file—an 11.025kHz tone at -6dBFS overlaid with the LSB toggling at 229Hz—that I had used to test the CardDeluxe's analog outputs in September.

The result can be seen in fig.1 (solid black trace). The absolute jitter level was a moderately high 1199ps peak-peak, while the absolute frequency error was a very low -3ppm . But the analog noise floor is around 12dB higher than I usually see from the Musical Fidelity X-24K

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on this test. Something is definitely not right with the combination of the X-24K at a 44.1kHz sample rate and the CardDeluxe's digital output, which appears either to have a high level of random noise jitter, a high level of noise on the ground connection, or both.

Meridian & Sonic Frontiers jitter bugs: I mentioned that relocking the CardDeluxe's S/PDIF output with a Meridian 518 solved the mute problem with the Musical Fidelity. Inserting into the datastream the Meridian, which uses the Crystal CS8412 data receiver with a double PLL clock-extraction circuit, produced the grayed-out trace in fig.1. (I used a 2m length of original Illuminati S/PDIF to connect the Meridian to the

My continued experience of the CardDeluxe impresses me with how much high-performance audio engineering is packed into its tiny frame.

X-24K.) The noise floor remains high for 500Hz to either side of the central peak, but then rapidly drops to around -129dBFS, which is the Musical Fidelity's intrinsic background level. The absolute jitter level is reduced to 984ps mainly because, while the Meridian significantly reduces the levels of the higher-frequency jitter sidebands, the strongest sidebands (at ± 229 Hz, indicated with red numeric "2" markers) remain as strong as they were without the Meridian at 882ps. In addition, a pair of sidebands appears at ± 81 Hz.

Soundwise, there was no doubt that the Meridian cleaned up the CardDeluxe's digital output, minimizing a sense of treble grain and enlarging the perceived soundstage.

For interest's sake, I dug out the sample I had bought some years back of the long-discontinued Sonic Frontiers UltraJitterbug, which uses the Ultra-Analog data receiver. Again I interposed the unit between the CardDeluxe's data output and the Musical Fidelity X-24K and looked at the jitter-related products in the latter's analog output. The result is shown in fig.2. The noise floor drops across the band to -129dBFS, but surprisingly, the measured jitter rises from 1199ps to 1529ps. Partly this is because

some low-frequency sidebands appear (at ± 31.2 Hz, ± 60 Hz, and ± 180 Hz)—or, more likely, are unmasked by the drop in the noise floor. However, this increase in jitter is predominantly due to a significant rise in the levels of the lowest-frequency data-related sidebands, even though the higher-frequency sidebands have been attenuated by the UltraJitterbug.

I could certainly hear a difference between the output of the Musical Fidelity with and without the Sonic Frontiers—there was mostly silence without it—but I thought the Meridian did the better job of maximizing the sound quality of the X-24K when fed by the CardDeluxe.

Final Thoughts: The fact that the other three D/A processors I had on hand had no problems with the CardDeluxe's S/PDIF output implies that the Musical Fidelity is unusually sensitive to the quality of the S/PDIF datastream feeding it—at least at 44.1kHz. But the fact that the TosLink optical data output of the RME soundcard reviewed this month was by far the cleanest with respect to jitter strongly suggests that, to maximize sound quality from soundcards, the hostile environment of the host PC is best kept electrically isolated from downstream audio components.

In my original review, I had mentioned having suffered from occasional dropouts with the inexpensive hard drives I was using with the CardDeluxe, and conjectured that this was due to bandwidth limitations when reading and writing the enormous amount of data from and to the drives. A number of readers, including Digital Audio Labs' Al Pickard, e-mailed me to say that the problem was more likely due to the fact that regular computer drives periodically perform what is called "thermal recalibration." This is not an issue with computer data files, where the host PC can simply wait; but with streamed data, like music, you get glitches. The only solution is to use certified "audio/video" drives, which can perform extended write and read operations without thermal recalibration. However, these drives are significantly more expensive than what you can buy at Office Depot. (I can recommend the A/V drives sold by Glyph Technologies—www.glyphtech.com.)

Overall, my continued experience of the CardDeluxe impresses me with how much high-performance audio engineering is packed into its tiny frame.

—John Atkinson

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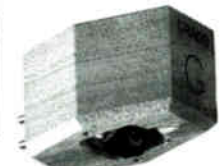
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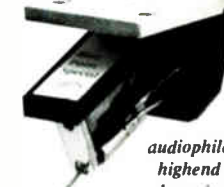
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Aural Robert

Robert Baird



It's no big surprise these days when records are built out of samples. It's a shock, however, when the opposite is true — when a live band is put together to bring a record of samples, loops, and live horns to life. That's exactly how the Greyboy All-Stars were born, in 1994.

“Originally, it was formed to play a record-release party for [San Diego club mixer] DJ Greyboy's first record,” says keyboardist Robert Walter. “We were going to play a bunch of the songs live that he had made out of samples on his record. After we played together, though, everyone saw that it could go far beyond that.”

Where “it” first went was to become an acclaimed headliner, The Greyboy All-Stars, who in 1998 amicably split into two groups: Karl Denson's Tiny Universe and Robert Walter's 20th Congress. Like the All-Stars, the two new groups focus on instrumental funk jams influenced by stylistic icons such as James Brown's JB's, the fatback bass riptides of New Orleans' Meters and the punchy, horn-driven soul of the Stax/Volt Memphis sound of the late '60s. It's those connections to soulful tradition that give the music of both groups a weight not found in most dance music these days.

“I think of it like this,” says Walter. “The Rolling Stones started as a blues band. What they ended up with was nothing like Muddy Waters' records, but [those records] are definitely still in everything they do. So that's kind of my goal in a smaller, much more modest setting.”

The setting that the diffident Walter modestly refers to is his own post-

Greyboy funk band, The 20th Congress. With their tradition-conscious leader, the band is responsible for this month's “Recording of the Month,” *Money Shot* (Fog City FCCD 004), an album that's

dance music, it's clear where their hearts lie. “I used to compose all these lines and all these parts you had to hit and all these figures for the rhythm, but I'm now trying to let the players have more room to interpret the piece,” Walter says. “It's more exciting for them to play that way, and also they happen upon more natural parts, so [the music] doesn't sound forced.”

“The other thing is, the band is jamming and vamps develop, sometimes out of another song. You're playing one song and by improvising you come to this other place that you can make that into something else.”

Perhaps the most satisfying part of the whole Greyboy aesthetic

is their devotion to being intelligently retro, to maintaining a connection to the past while creating music that's very much a part of the present.

“It's tricky,” Walter admits. “On my first solo record I got some flak about how purist it was. [In Greyboy speak, “purist,” loosely translated, means devoted to the music of the past.] In the Greyboy All-Stars we were really into that. We felt we'd discovered these records that had been overlooked and not as appreciated as they should have been, and we wanted to bring them to the forefront. We didn't want to imitate them exactly, but we wanted to take the best parts of them and push that. So there wasn't much of an attempt to make something new. There was this purist attitude.”

“Part of why I wanted to do something on my own was that I felt like [The Greyboys] had to have a precedent on another record for what we were



Would you get funky with this man? Robert Walter and his 20th Congress sink their teeth (seen here) into the greasy, sweet tradition of funk.

as listenable as it is danceable.

Unlike most electronic dance music, the Greyboy offshoots play it all live —

“We'd discovered these records that had been overlooked. . . . We didn't want to imitate them exactly, but we wanted to take the best parts of them and push that.”

— Robert Walter

no computers or turntables, no loops, samples, or effects. While they're not about to be drawn into an argument over the virtues of electronic versus live

The holiday season can be a difficult time for the avid audio hobbyist.



Having been on the other end of the telephone line as we talk with audiophile planning their Christmas purchases, we've come to an understanding of some of the **important strategies** that work to make a holiday season satisfying for the enthusiastic audio hobbyist. We thought we'd share a few with you in the hope of helping you make the holiday season a little more jolly:

1) **Don't expect too much**, nobody has any idea why you want this stuff. Don't expect them to buy that Wadia you really wanted when they really don't understand how it could be better than the \$399 Sony they just saw at the Bargain Warehouse--after all the 19 year old salesman there said it was super cool.

2) Find relatively inexpensive audiophile gifts you like, then make a very specific list. We found that most of the **wives that call us have absolutely no idea** what they're ordering. So, unless they have a very specific list, they may get too the wrong thing.



Sangean AM/FM Tuner

3) **Buy headphones.** Now this may seem like a very self-serving piece of advice on our part (and it is), but we found that most

Ten Audiophile Tips for a Successful Holiday Season

wives and girlfriends understand headphones and what they're all about. When you give them the opportunity to buy a pair of headphones for you, they can appreciate what the gift is about, and are more likely to spend a little extra.

4) (Related to item 3 above), try to list gifts that people can read and understand. If items one through five are something like "WidgetMaster 2988 Rev. 5 Digital Dither Decoder", and item 6 is "**Cool socks and underwear**", guess what you're going to get.

5) **Covert purchasing:** in the hustle-bustle of Christmas buying you can often bury a few purchases for yourself. A subtle but effective advanced form of this technique is to split your purchase across three or four credit cards. Most retailers are aware of, and can accommodate this advanced maneuver.

Now a few nifty gift ideas:

6) Every true music lover, audiophile or not, should have a **good portable CD player.** Our current recommendation is the Panasonic SL-CT470. A dandy little player, that sounds terrific, and is priced at around \$100. While we're at it, the Sangean AM/FM portable tuner is a nifty little gift at \$49.



Panasonic SL-CT470

7) If you already have a portable CD player that you like, and are using the abysmal headphones that came with it, quickly, before you can think about it, **douse it with lighter fluid and torch them.** Then ask your favorite relative for a pair of Grado SR-60s—easily the best headphones under \$100.



Grado SR60

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10) Now, and this one is very important, you have got to know that you're not going to get what you want, so always remember to thank the giver for their generous gift, then ask them, "Where did you find such a lovely gift?" My wife tells me that most stores will take pity on idiot husbands after Christmas and will refund your money. **Then go buy CDs.**

Merry Christmas, Happy Hanukkah, and don't forget we will be open through the New Year to help you by the things you really wanted and didn't get.



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Karl Denson

doing. 'Well, this sounds like a Ramsey Lewis tune, so we'll go all the way with that vibe.'

Another vibe the Greyboys reveled in was vintage gear — as seen in the lists of studio gear they included on several albums, including their masterpiece,

Town Called Earth (Greyboy 005).

"On old audiophile records and also some jazz records, they'll have at least the microphones and what tape machines they used, and we were sort of paying tribute to that," Walter says.

Since the dissolution of the Greyboys two years ago, the two ex-partners have put their own stamps on their respective bands while still retaining much of the original Greyboy funk flavor.

A horn player who's not averse to the occasional vocal turn, Denson has released one EP, *Karl Denson's Tiny Universe* (self-released), and will drop another early next year, titled *Dance Lesson # Two* (Blue Note). Denson says the new album, while still funky, has a stronger connection to the jazz past.

"Eddie Harris, [David] 'Fathead' Newman, Rahsaan Roland Kirk, Yusef Lateef — I've always been into all that mid-'60s Atlantic stuff," Denson said in a recent interview. "It's undoubtedly the music that's influenced me the most."

Walter began his solo career with *Sound of '70* (Greyboy 004) before releasing *Money Shot* earlier this year. Like Denson's solo project, 20th Congress has stayed in a mainstream funk mode, albeit with a few more

organ and Fender Rhodes solos than in the Greyboys days.

"I'd like to be in the tradition of Booker T. and the MG's or The Meters, but in a more modern setting that embraces elements from electronic music, dub reggae, heavy metal, or whatever else — but coming out of that tradition. Those bands... it wasn't like

"I've always been into all that mid-'60s Atlantic stuff. . . . It's undoubtedly the music that's influenced me the most." — Karl Denson

jazz, where they were worried about the line or how much they play in a solo. They set a mood — every piece set a mood by itself. The old Meters records on Josie, they're full of great compositions. You can write them off as just a funky thing, but that music has a lot of depth for me." ❧

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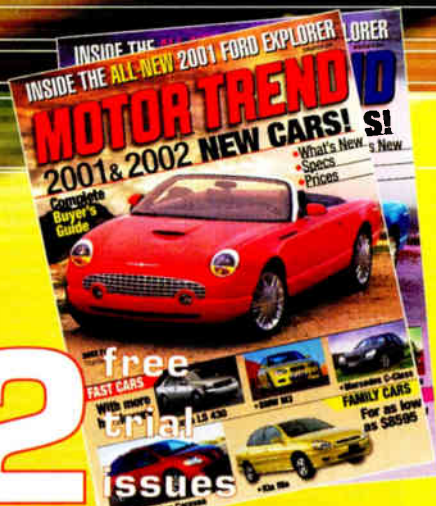
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BBC Session Recordings

The sound is oh, so familiar, the lyrics just a few words shy of a Who classic: “People try to put us down,” Roger Daltrey spits, “just because we’re new in town. / They said the BBC was dead and cold, / but our new approach is fresh and bold.” Meanwhile, the band behind him offers support with power-chord fury and an insistent chant: “Talkin’ ’bout my favorite station / talkin’ ’bout my favorite station...”

Not quite a timeless boast of my-generation hubris, this is a 1967 radio jingle by the Who, and the first track of a CD called, simply and accurately enough, *BBC Sessions* (MCA 088 111 960-2, 2000).

Rather than a bit of Swingin’ ’60s pop ephemera, the Who’s Radio One jingle is a fragment of a tradition almost as old as British rock itself. For nearly 40 years, the British Broadcasting Corporation has captured musicians “in session,” ostensibly for one-off broadcast on rock shows such as Brian Matthew’s *Saturday Club* (which aired at the very un-rock’n’roll hour of 10am) and its nighttime successor, *Top Gear*, hosted first by Matthew and later by the legendary — and still active — John Peel. Not quite concert performances or full-fledged studio workouts, in their early years BBC sessions were a live-wire hybrid, with bands expected to produce four or five songs in 3½-hour bursts. (By 1967 this had been extended to two 3½ hour sessions, with an hour’s break for beer and inspiration.) Most of the studio equipment was painfully ancient, even for its day, and the recording techniques were, at best, rudimentary.

As Beeb engineer Bob Conduct recalls in David Sinclair’s excellent liner notes to *The Jimi Hendrix Experience BBC Sessions* (MCA MCAD2-11742, 1998): “We used to record a backing track, and that track maybe didn’t have vocals or a guitar solo



or whatever. Then you’d play the track back to the band, usually via very small communication headphones — high-quality cans just didn’t exist — and you couldn’t vary the mix in any way at all, either for the band or for yourself. That was also copied onto a second tape and mixed live with whatever the band was adding to it, which might be a first layer of backing vocals or a keyboard overdub. There was no chance to go back and alter the mix, so you simply had to get it right in the first place. The process could happen up to a maximum of three times, after which you lost quality enormously.”

The BBC sessions came to exist for reasons even more antiquated than the equipment. Fearful that radio stations playing records would depress the demand for bands in concert, the British

Musicians’ Union had successfully lobbied for severe restrictions on the broadcast of recorded music, also known as “needle time.” As late as 1967, the BBC’s two national networks, Radio One and Radio Two, could play records only 84 hours a week between them. This created a huge demand for musicians to play their hits, try out new material, or bang out cover versions, live or “in session.” Although needle-time restrictions were modified over the years, they weren’t dropped entirely until 1988, by which time the tradition of musicians dropping by the Beeb’s studios to record had become so ingrained that it continues to this day. (Of course, the equipment’s a lot better now.)

Recent years have seen the release of many BBC Session CDs, often in bur-nished mono or “simulated stereo.”

While the audio quality is rarely top-notch, the performances captured are often fascinating chances to hear young bands develop their sound and pay tribute to their influences—or, more revealing yet, an opportunity to hear rock gods goof around, all in the interest of self-expression, not to mention self-promotion.

One of the best of these CDs is the Beatles' double disc, *Live at the BBC* (Capitol CDP 8 31796 2, 1994), a model in both the depth of its offerings (69 tracks, including a dozen short, funny radio interview clips) and the quality of its packaging: extensive liner notes, great photos, and a track-by-track annotation listing the dates and circumstances of each recording.

As in so many other ways, the Beatles greatly changed the rules by which the BBC approached rock'n'roll. Between 1962 and 1965 the Beatles were featured on more than 50 Beeb broadcasts, and during the summer of 1963 they had their own weekly show, *Pop Goes the Beatles*. Roughly two-thirds of *Live at the BBC* focuses on 1963 radio performances, and the set as a whole is weighted toward the Beatles covering the songs of others. (Only about a dozen songs are Lennon-McCartney originals, and a few of these are obscurities, such as "I'll Be On My Way," a lilting Buddy Holly-influenced rocker written for Billy J. Kramer and the Dakotas.) Still, *Live at the BBC* is a fascinating document, not so much for its sometimes workmanlike nods to Chuck Berry, Little Richard, and Elvis, but rather for the band's surprising ability to turn Ray Charles' "I Got a Woman" into a rockabilly raver, or the almost country lilt they lend to "I'm a Loser."

It's clear from these recordings that the Beatles' appetite for American music was voracious, ranging from '50s rock'n'roll and country to Motown and Brill Building pop and a whole lot more. George's fondness for rockabilly is evident throughout, but it's particularly fun to hear Ringo sing Carl Perkins' "Matchbox" and tackle the vocals on "Honey Don't." It won't come as a surprise to most that Paul McCartney, as early as 1963, was indulging his mushiest

instincts, covering Lenny Welch's "A Taste of Honey," Mikis Theodorakis' sugar-pop abomination "The Honey-moon Song," and "Till There Was You," a song from *The Music Man* made popular by Peggy Lee. But who knew that John had his own guilty pleasures? He

displayed in the band's jaunty, propulsive take on a Holland-Dozier-Holland obscurity, "Leavin' Here."

The rest of the album is largely devoted to the band's original material, with most of their biggest '60s hits—"My Generation" "Substitute," "I'm a Boy,"

"Happy Jack," "Pictures of Lily"—represented by raw, cathartic performances that predate the Who's first official concert recording, *Live at Leeds*, by three to five years. Particularly effective is a 1965 version of "Anyway Anyhow Anywhere"—its distorted feedback guitar squall still sounds edgy and alive today. It's also welcome to hear the group romp or jog through lesser-known originals such as "Run Run Run" and "Disguises," and wholly impressive that they pull off the mini-opera of "A Quick One (While He's Away)" with virtually no studio trickery.

There's a three-year gap between this 1967 recording and the

Who's next BBC session, in 1970. The band that shows up for the disc's final half-dozen tracks is a schizophrenic blend of blunt efficiency (a two-minute version of "Substitute," an affectionate but not terribly distinguished version of "Shakin' All Over") and concept-album ambition ("The Seeker," "I'm Free," "Relay"). Still, it's heartening to hear Roger Daltrey completely mess up the lyrics in the last verse of "Long Live Rock" and laugh about it, as giddy and carefree as he must have been as lead singer of the Detours.

The Who's *BBC Sessions* is also notable for its skillful use of radio jingles, and short interview clips of DJs such as Matthew asking Townshend dopey questions about his artistic intentions. It's a gas to hear Townshend deny any meaning at all to the lyrics of "I'm a Boy," and a hoot to hear him earnestly explain the reason for his guitar-smashing theatrics, as well as estimate the total cost of damages with the gravitas of an accountant (approximately "six thousand quid"). The BBC jingles the Who recorded for "My Generation" and "Boris the Spider" are actually much more than just vintage curios: As alluded



gives Ann-Margret's pop hit "I Just Don't Understand" just enough blues inflection to make it bearable. All in all, *Live at the BBC* is a fascinating look at a band on the cusp of supernova stardom, still in thrall to their influences but soon to exceed them in ways unimaginable.

Although not nearly as extensive as

Although not nearly as extensive as the Beatles' double disc, the Who's *BBC Sessions* may be even better.

the Beatles' double disc, the Who's *BBC Sessions* may be even better—a single-disc, 25-track marvel documenting the group's 10 Beeb performances between 1965 and 1973. Cover versions dominate the first quarter of the disc, proving both that Roger Daltrey had no business trying to imitate James Brown, and that the Mods' appreciation for Motown ran admirably deep—as

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to in Andy Neill's excellent liner notes, both were recorded in 1967, just a couple of months after the Marine Broadcasting Bill outlawed the pirate radio stations, such as Radio Caroline, that were rock fans' musical lifelines during the Beeb's early, fumbled attempts at hipness. The pirates' demise led to the Who's loopy tribute to pirate radio, *The Who Sell Out*, while these jingles, recorded at roughly the same time, acknowledged that the BBC, through its new, more rock-friendly Radio One, had quickly become even more important in helping the band get its music heard widely. Meet the new boss, same as the old boss.

Even more than for the Who and the Beatles, the BBC was crucial to the initial success of Jimi Hendrix. The guitarist's legendary early-'60s apprenticeships with Little Richard, the Isleys, and Curtis Knight are well-known, but it wasn't till Hendrix hooked up with English manager Chas Chandler and first toured the UK, in 1967, that his career really took off. The two-disc *Jimi Hendrix Experience BBC Sessions* is an admirable attempt to place Hendrix's BBC recordings, made between 1967 and 1969, in the context of his pioneering achievements, and it mostly succeeds.

By 1967, the BBC sessions had shifted to a primitive kind of "simulated stereo," but their recording practices were still very rudimentary. Although the remastered sound on the Hendrix discs is about as good as you can expect given these recording techniques, it's still a kick to hear Hendrix play "Foxey Lady" in early '67, a few months before the release of *Are You Experienced?* Hendrix completists will most enjoy the opportunity to dissect two or more versions of "Hey Joe," "Hear My Train A Comin'," and "Drivin' South" (the Curtis Knight song), while blues aficionados will appreciate Hendrix's funky, joyful take on "Hoochie Coochie Man." But Hendrix's brief career has been sliced, diced, and repackaged so many times that it's sometimes hard to cut through the myths. One of the greatest values of this 2-CD set is that it deflates some of those myths and, even more important, humanizes a rock god who was a sometimes strange, complicated man.

BBC Sessions includes two tracks recorded in October 1967 with Stevie Wonder, who happened to be visiting the studio that day and briefly played drums with the band. First myth punctured: The 3½ minutes of "Jamm'n" and a lackluster version of "I Was Made to Love Her" are about as legendary as the Mitch Mitchell piss break that made them possible. Second myth: That's *not*

John Lennon singing lead vocals on a fun cover of "Day Tripper"; it's Noel Redding doing a pretty good impersonation.

Still, some of the biggest Hendrix revelations come from some of the most seemingly trivial moments, like the "barking dogs" that provide backup vocals on a goofy version of "Hound Dog," and a bluesy, impromptu Radio One jingle that, oddly, compares the BBC to a romantic rival: "You stole my gal, but I love you just the same." Hendrix experts will cry heresy, but some of my favorite moments on these discs are not Hendrix finding and extending his incendiary guitar style (although there are plenty of examples of both), but the four minutes of lunacy from a 1969 BBC television special that close the disc. The show's

One of the greatest values of the Jimi Hendrix 2-CD set is that it humanizes a rock god who was a sometimes strange, complicated man.

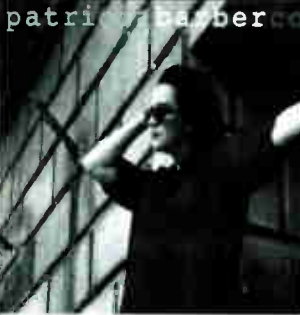
host, pop singer (and airhead) Lulu, politely requests yet another version of "Hey Joe," and Hendrix and band impolitely oblige with a squalling mess of feedback and noise before slowly edging their way toward a familiar melody. Once there, Hendrix abruptly cuts them off, announces an impromptu tribute to Eric Clapton and Cream, and launches into a minute or so of "Sunshine of Your Love" before announcing, to the delight of UK viewers and the horrified BBC producers busy pulling the plug, "We're being put off the air..." Great stuff... and legendary in its own exceedingly human way.

Any hope that Eric Clapton might figure prominently in the Yardbirds' *The*



BBC Sessions (Repertoire REP 4777-WY, 1999) is dashed by looking at the recording dates of the first session included here: June 5, 1965, a few months after Clapton had left the group in disgust at the pop direction signaled by the band's first big hit, "For Your Love." Still, blues and R&B feature prominently in this set's 33 tracks, including surprisingly credible covers of Billy Boy Arnold, Bo Diddley, Howlin' Wolf, and Elmore James. Lead vocalist Keith Self wasn't much of a blues singer, but it's a joy to hear a young Jeff Beck ape his masters and then quickly stamp out his own distinctive style. Most of the band's biggest hits are here — "Heart Full of Soul," "Shapes of Things," "Over Under Sideways Down," "Little Games" — in vibrant, full-bodied forms, and there's some fun to be had at bassist Paul Samwell-Smith's expense as he tries to explain to a BBC DJ why the "Evil Hearted You" single has two "A" sides. Even more fun is his pretentious description of the second "A" side, a Spinal Tap-worthy bit of chanting-monk claptrap known as "Still, I'm Sad" — the epitome of a true "B" side.

The Yardbirds' *BBC Sessions* is good fun overall, but there are a couple of shockingly bad covers: a human jukebox version of "Hang On Sloopy" and a laughably lame run at Dylan's "Most Likely You'll Go Your Way (And I'll Go Mine)". And many Yardbirds fans will be disappointed that the group's third great guitarist, Jimmy Page, isn't a bigger presence here; he's featured on only six tracks, plus a 1968 interview in which a DJ gently prods a clearly uncomfortable



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Page about the band's declining commercial fortunes in the UK.

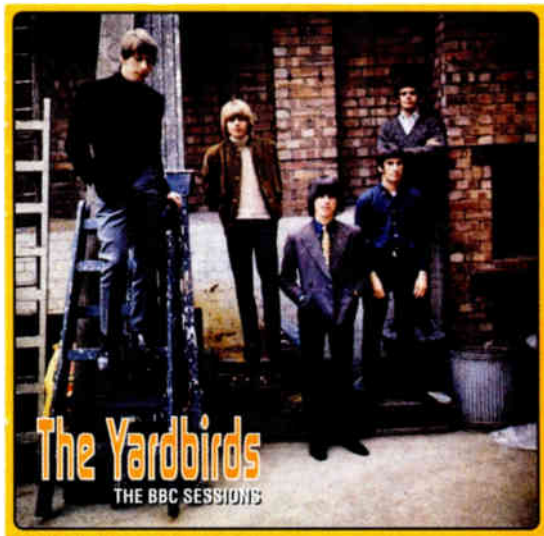
Not to worry. The Yardbirds imploded, but Page soon recovered by joining a humble little quartet known as Led Zeppelin, whose double-disc *BBC Sessions* (Atlantic 83061-2, 1997) captures the group between March 1969 and a 1971 London concert that takes up all of disc 2.

From the first thundering proto-metal thump of "You Shook Me" (disc 1, track 1), it's clear that Page had grown 10 times more confident in the year since his last BBC session with the Yardbirds. Of course, part of this is context; the rhythm section of Page's former band couldn't possibly compete with Bonham and Jones, and Relf was no match for Plant's sometimes over-the-top histrionics. (Listen to him stretch out the word "long" in an extended scream at the end of "You Shook Me.")

Except for a tinny, sloppy version of Eddie Cochran's "Somethin' Else," you won't find any goofy on-air chatter here, or much in the way of let's-bash-it-out oddities. This disc is probably the best overall BBC listening experience: the sound quality is far better than the earlier discs. In fact, it's hard to find much fault with the sequencing or the mastering, both supervised by Page. You also get the band in its early, primal stages: Listen to the first of two versions of "Communication Breakdown," especially Page's spacey solo, for some sense of how feral and adventurous Zeppelin sounded in June 1969, having started work on *Led Zeppelin II* and sounding twice as sophisticated and intense as they had even three months earlier. You can clearly hear the sound of rock changing dramatically here: Instead of the three-minute bursts of compressed genius found on most other BBC discs, you get a band stretching far beyond the accepted radio boundaries of 1968. This was mostly a good thing, proven by a six-minute version of "Whole Lotta Love" that deserves every second of its time and makes one beg for more.

Besides deviating substantially from disc 1's BBC studio sessions, disc 2—essentially a concert recorded for BBC broadcast—displays some of the excess that increasingly weighed down rock as the '70s wore on. I prefer the 2:40 of concise brilliance of the band's 1969 version of "Communication Break-

down" to the 18:36 workout found on disc 2. And the 13:45 devoted to "Whole Lotta Love," complete with a blues medley that includes "Boogie Chillin'" and



"That's Alright Mama," was undoubtedly more thrilling if you were at the Paris Theatre in 1971 than it is listened to at home in 2000.

For a set this extensive, it's a shame that Luis Rey's thin liner note isn't more worthy of its subject. I'd love to know, for example, why a six-minute version of Page and Plant's "Thank You" was omitted from the original radio broadcast, and why Page chose to include it in this 1997 package. Cavils aside, Led Zep's *BBC Sessions* is a great aural document, and a worthy complement to the group's studio recordings.

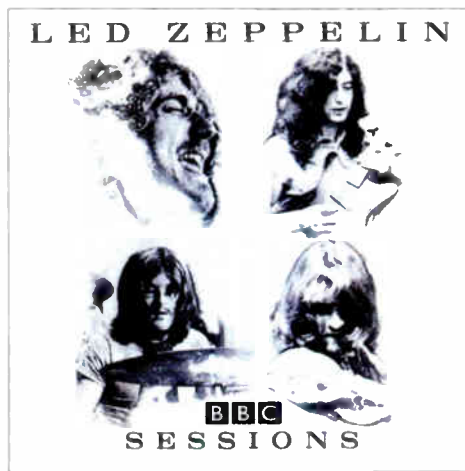
While BBC sessions often featured artists doing cover versions, the results are mostly interesting as audio blueprints of bands still developing their own sounds, or as offhand nods to big hits of the day. Not so Fairport Convention's *Heyday: BBC Radio Sessions, '68-'69* (Hannibal HN CD 1329, 1987). Only two of its 12 songs are band originals, and yet the album feels wholly their own, thanks to the interpretive genius of Sandy Denny, Richard Thompson, and the criminally underrated Ian Matthews. What's remarkable is that Fairport Convention, widely recognized as leading pioneers of British folk-rock, devote most of their attention here to material by such quintessentially North American songwriters as Johnny Cash, Bob Dylan,

Leonard Cohen, and the Everly Brothers. However they're remembered today, *Heyday* is a reminder that Fairport was initially inspired by the California folk-rock of the Byrds and, yes, The Mamas and the Papas.

By 1968, however, Fairport could take a song such as "Some Sweet Day," by country songwriting duo Felice and Boudleaux Bryant, and turn it into a distinctive display of their intricate harmonies and Thompson's slyly assured slide guitar. While their stunning version of Dylan's "Percy's Song" and a gorgeous take on Cohen's "Bird on a Wire" are among the highlights, even shaggier covers, such as the Everlys' "Gone Gone Gone" and Gene Clark's "Tried So Hard," are also sumptuous treats. Of the pair of originals, Simon Nicol's "Shattering Live Experience" and "If It Feels Good, You Know It Can't Be Wrong" sound remarkably true

to their titles: the first is simply gorgeous, the second as dated as the just-do-it sentiment it naively expresses.

Many of the BBC sessions recorded in the late '70s and early '80s, mostly released on the Strange Fruit label in the late '80s and early '90s, have since fallen out of print. Two of the better ones are by the Buzzcocks (*The Peel Sessions*, DEI 8106-2, 1989) and Billy Bragg (*The Peel Session Album*, DEI 8120-2, 1991), both on Strange Fruit. I'm especially partial to the former. Formed in 1976, the Buzzcocks were less interested in pure shock than the Sex Pistols, and much less interested in politics than the Clash. What set them apart, and makes their 14-track disc such a treat, is that the band combined the buzz-saw energy of the



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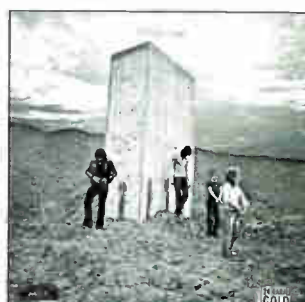
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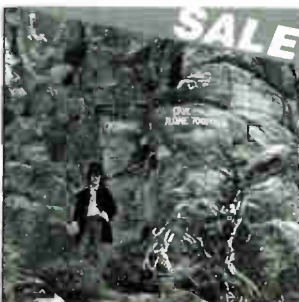
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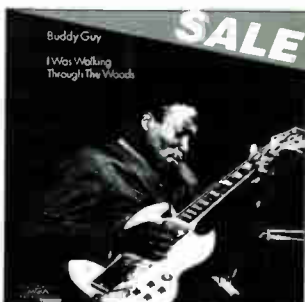
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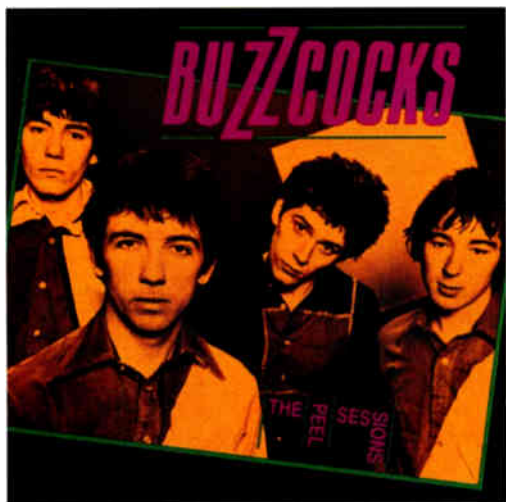
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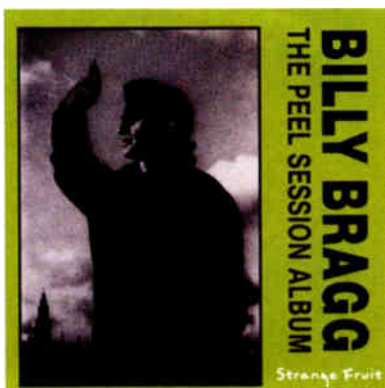
Ramones with lead singer Pete Shelley's sure gift for pop-punk melodies and lyrics that were often poignant expressions of adolescent angst.

Recorded in four sessions between 1978 and 1979, *Peel Sessions* picks up shortly after the departure of founding member Howard DeVoto (who left to form an artier punk band, Wire). Among its highlights are amphetamine-fueled takes on two of the band's best songs: "What Do I Get?," one of the freshest, briefest takes ever on unrequited love, and "Everybody's Happy Nowadays," a slice of pop-punk heaven with a distinctive falsetto chorus that sets it apart from the punk rock of its time—or even today's.

Unfortunately, this disc doesn't include two of the band's other great songs,

"Ever Fallen in Love with Someone" (de-fanged as a late-'80s Top 40 hit by the Fine Young Cannibals) and "Orgasm Addict," a crude but funny testament to a topic older than punk or rock'n'roll itself. No matter: Fans looking for the UK hits should seek out *Singles*

Going Steady (EMD/IRS 13153, 1979), a flawless compendium of the band's singles. What *Peel Sessions* provides is a glimpse of a durable punk band opposed to fast cars (!) and noise (!!), and musically adept enough to offer a credible Bo Diddley beat, race through a pair of surprisingly effective instrumentals,



and still find time for the chilly chilly robo-punk of "Hollow Inside." And, even odder, there's a loopy tribute to extra-sensory perception: "Do you believe in ESP? / I do and I'm trying to get through to you." Like the Buzzcocks, Billy Bragg was inspired by punk—in his case, the Clash—but instead of focusing on adolescent lust, he chose to become even more political than his heroes. Actually, this is only half true. Recorded between 1983 and 1988, Bragg's 19-track *The Peel Session Album* is a good distillation of what made a large-beaked

guy standing on stage in a flannel shirt, with just a guitar and a thin but effective voice, so compelling. Like Bragg's work overall, his Beeb performances are neatly split between politically minded folk-punk ("Between the Wars," "Which Side Are You On?") and his even more heroic struggles with women ("Greetings to the New Brunette," "She's Got a New Spell," "Valentine's Day is Over," "Love Gets Dangerous").

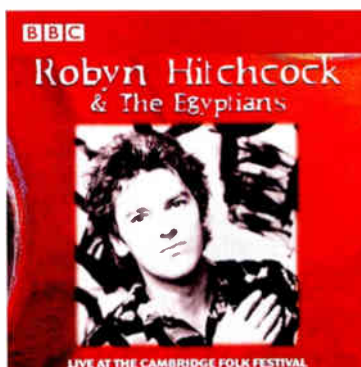
More than half of the material on this CD is taken from Bragg's *Back to Basics* and *Workers Playtime* albums, both on Elektra, and while he doesn't radically reinvent any of those songs here, this satisfying collection of intimate performances includes a couple of inspired covers (the Smiths' "Jeane," John Cale's "Fear is a Man's Best Friend"), plus Bragg's funny rewrite of "Route 66," called "A13 Trunk Road to the Sea." As Bragg's star has risen again, thanks to his two collaborations with Wilco in extending Woody Guthrie's compositional legacy, it's useful to use this disc as a look back at one man's long devotion to social and political protest.

It's hard to recommend much about Robyn Hitchcock's *Live at the Cambridge Folk Festival* (Fuel 2000 302 061 070 2,

2000). This 1992 recording is branded as a BBC production, but under any heading it's a slender document of the eccentric singer-songwriter. Although Hitchcock can be a charming live performer, this CD is weak on several counts—and Hitchcock's sometimes off-key singing and the ragged performances of his band, the Egyptians, are just the start. It doesn't help that there are only 10 songs, and that nearly half of them come from weaker albums like *Perspex Island* and *Globe of Frogs*. True, the album contains a satisfying version of "Uncorrected Personality Traits," an a cappella highlight of Hitchcock's shows from the mid-'80s on, but overall, *Cambridge Folk Festival* feels less like a historical docu-

ment than an audio snapshot of Hitchcock a few years past his mid-to-late-'80s prime.

Even worse, the packaging is almost unspeakably shoddy: the track listing on the CD



cover bears only passing resemblance to the sequence of songs on the CD. Hitchcock's liner notes have the funny, surreal charm that Hitchcock often displayed in his between-song patter, making one wish that the producers of this slight package had captured more of this anarchic spirit on the disc itself. Pass this one up, and pull out copies of Hitchcock's best studio CDs, such as *Fogmanial*, *Element of Light*, and *I Often Think of Trains*.

Even more than Hendrix's career-making splash in England, Britain's embrace of Ted Hawkins in the mid-'80s was instrumental to Hawkins' discovery by Americans who otherwise might not have stumbled across him while he was playing his distinctive blend of country, soul, pop, and blues for chump change on the Santa Monica boardwalk. In addition to the ubiquitous John Peel, one of Hawkins' biggest boosters was BBC DJ Andy Kershaw, who recorded six of the 19 tracks of *The Kershaw Sessions* (Fuel 2000 302 061 058 2, 2000), in Los Angeles—the first two at Hawkins' Inglewood home, the next four in a Sunset Marquis hotel room where the Eurythmics were staying (!). The rest were captured during Hawkins' visits to

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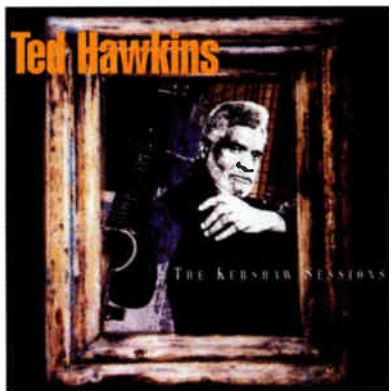
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the UK, including his debut tour, which Kershaw writes about lovingly in the CD's sparse but effective liner notes.

Because Hawkins was recorded solo throughout most of his career—just that sad voice and acoustic guitar—these recordings don't deviate dramatically from his studio recordings. Many of the versions of Hawkins' best-known material included here—"Bring It On Home Daddy," "Happy Hour," "Ladder of Success"—don't add much to our musical understanding of him. Still, even if you own all four of Hawkins' best recordings (*Happy Hour*, *Watch Your Step*, *Next Hundred Years*, *Songs from Venice Beach*), this set is worthwhile for songs not widely available: from his reinvention of Doris Troy's 1963 pop-soul hit, "Just One Look," to lesser-known Hawkins originals such as "Dollar Tree" and "Nowhere to Run."

Just released as we went to press, David Bowie's *Bowie at the Beeb: The Best of the BBC Sessions, '68-'72* (Virgin advance CD, 2000) offers both historical perspective and some of the newest BBC recordings officially released. This 3-CD set is a fascinatingly odd document, with two discs devoted to the years referenced in its title, and a third, "bonus" disc recorded June 27, 2000 in concert at the BBC Radio Theatre in London.

Having failed at being a Mod and a soul singer, the Bowie who appears on disc 1 is still searching for a sound to call his own, particularly on the first five tracks, which are mostly string-laden pop goo. The rest of the disc is largely devoted to songs from the 1969 album *Man of Words, Man of Music*, aka *Space Oddity*, excluding that title track (which Bowie refuses to play because it would take "about five orchestras to get the right sound... possibly past everybody's budget"). While "Space Oddity" obviously made Bowie a star in the UK, the album it's from is a queasy mix of hippie folk ("Memory of a Free Festival,"

"Wild Eyed Boy from Freecloud") and sub-Dylan-esque imagery ("Unwashed and Somewhat Slightly Dazed"). The musical blend hasn't aged well, and Bowie sounds almost as uncomfortable as BBC host Bob Harris, who awkwardly introduces these performances.

Disc 2 is a lot more fun. The material, drawn largely from *Hunky Dory* and *Ziggy Stardust and the Spiders from Mars*, is much better, but you can also hear Bowie in the process of perfecting a uniquely alien persona. Bowie's Spiders from Mars band was a marvel, and from the first glam rockabilly chords of track 3, "Hang On to Yourself," the tone of *Bowie at the Beeb* changes dramatically—for the better. While these performances are generally well-played and relatively faithful to the source material, there are also some surprises. In this setting, the guitar solo on "Moonage Daydream" sounds like a second cousin to the one on "Hotel California," and there's a distinctly flamenco flavor to "Andy Warhol." The sound quality is generally good except for some odd lapses—like the annoyingly tinny piano plinking on "Suffragette City" and the flanged guitar on "Starman," which sounds as if it was recorded in a bathroom.

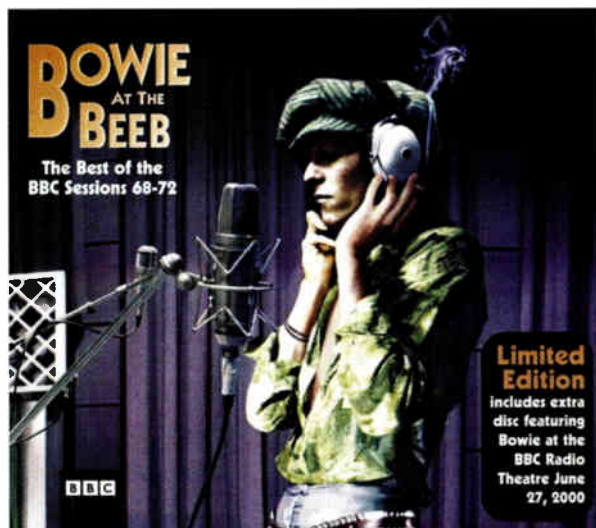
Disc 3 isn't much of a "bonus," bearing only passing resemblance to Bowie's early-'70s peak with *Ziggy Stardust* or to his chilly techno-pop pioneering from later in the decade. Instead we hear a slick, slightly bloodless entertainer, a guy who recently raised millions of dollars by selling bonds to investors in exchange for future revenues from his catalog. While the band behind him sounds fine technically, the 15 performances on disc 3 sound joyless and frequently self-indulgent. Do we really need more than eight minutes each of "Wild as the Wind," "Absolute Beginners," or even "Let's Dance"?


Your answer to that question depends on how loyal a Bowie fan you remained through the late '80s and the '90s, but a flaw of *Bowie at the Beeb* is that it gives no hint of how Bowie pro-

gressed from the warped glam star of "Rock'n'Roll Suicide" (the final track on disc 2) to the utterly dependable, aging celebrity he's become.

Today, the BBC still records visiting musicians "in session," and anyone with a computer and Internet service provider can listen any time they want (www.bbc.co.uk/radio1/). Radio One DJ John Peel is still championing lesser-known musicians, including recent Japanese favorites eX Girl and Melt Banana, Austin indie rockers... And You Will Know Us By The Trail Of Dead. (Funny, MTV hasn't picked up on them yet.)

Although it's a bit slight at about 35 minutes, one of my favorite recent BBC session releases is by Olivia Tremor Control, the low-fi orchestral pop heroes. The band's *John Peel Session* (no label) may be of dubious legality, but it's



great fun, including a jaunty, confident recording of "I'm Not Feeling Human," plus two extended suites that would make Pete Townshend and Brian Wilson proud. The downside is that there are no liner notes, and no chronological distance to give the recording any kind of historical context. Which gets to the heart of what makes the best BBC session recordings so great: They offer an opportunity to hear musicians still in the throes of creative development. They capture artists in rarely heard settings (many of the bands recorded by the Beeb in the '60s—the Who, to name just one example—didn't release live recordings until the early '70s or later.) They document totemic performers like Hendrix just goofing around. But, more than anything else, they offer important audio evidence of a particular musical time and place. 

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Recording of the Month

ROBERT WALTER'S 20TH CONGRESS: *Money Shot*

Fog City FCCD 004 (CD). 2000. Dan Prothero, prod., eng.; Kevin Ink, asst. eng. AAD? TT: 59:24

Performance ★★★★★/2
Sonics ★★★★★/2

While all music is hard to describe in words some genres, like Funk, are impossible. In his book *Funk* (St. Martin's Griffin, 1996), Rickey Vincent wrestles with this problem on the first page: "Funk is a many-splendored thing. Funk is a nasty vibe, and a sweet, sexy feeling; funk is a high, but it is also down at the bottom, the low-down earthy essence, the bass elements. Funk is at the extreme of everything."

"Extreme" is at the center of a music that lends itself to excess. Prince's tight purple-velvet suit and really bad films, and the fur-draped Brides of Funkenstein, are the first examples that come to mind of funk's willingness to go crazy. That sort of indulgence carries over into the music, where never-ending jams get self-indulgent fast. Jams stretch into hours, solos get repetitive, and ultimately the music loses its trademark steam. Outside of James Brown and his indomitable ex-bandmembers, players like Maceo Parker and Fred Wesley—and, oh yeah, we can't forget Bootsy Collins—funk has too often become the province of amateurs who are stars only in their own minds. Also, some of funk's feel has been co-opted by the jazz-lite crowd.

Strangely enough, genuine, well-played, idea-heavy, hot buttered funk has taken root on the west coast, thanks in large part to The Greyboy Allstars, a band that formed in 1994 around alto/tenor sax player Karl Denson and keyboardist Robert Walter. But, as so often happens, the Greyboys couldn't quite contain the talents and ideas of its two very distinct and gifted leaders. Walter and Denson are still friends and often play on the same bills, but have begun to pursue solo careers: Denson with his band Tiny Universe, Walter with the 20th Congress. For the most



Robert Walter's 20th Congress (left to right): Robert Walter, Stanton Moore, Cochemea Gastelum, and David Carano.

part their music remains very similar to that of the Greyboys, except that in each case the leader's instrument is now the major focus.

The Greyboy formula was simple, retro, and way funky: drums and bass set the rhythm, everyone else fell in behind, and the jam escalated from there. There were no vocals, but lots of space for soloing. While the result sometimes sounded like serendipitous jamming, Walter confirmed for me in a recent interview that the head arrangements were all written down, and that there were very definite song structures at work. The solos, most of them improvised, tended after the first playing to vary wildly on a night-by-night basis.

Walter keeps the good times rolling on *Money Shot*, his second solo outing. These sweaty workouts are an acquired taste, but to the right ears can be irresistible. I'm not usually a fan of jazz organ trios, and yet I like this. Imagine a manufacturer's room at *Stereophile's* upcoming Home Entertainment 2001 show full of white man's overbite



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classical

LIBBY LARSEN

Symphony 4, Songs

Symphony 4 (*String Symphony*), *Songs of Light and Love*, *Songs from Letters*
 Benita Valente, soprano; Joel Revzen, Scottish Chamber Orchestra
 Koch 3-7481-2 (CD), 2000. Susan Napodano DelGiorno, prod.; Phil Hobbs, eng. DDD. TT: 54:57
 Performance ★★★★★
 Sonics ★★★★★

At 50, composer Libby Larsen has hit her stride as one of America's most original and prolific composers. The co-founder (with Stephen Paulus) in 1973 of the Minnesota Composers Forum (now the powerful American Composers Forum), she was also the first female composer-in-residence with an American orchestra, spending five years with the Minnesota Orchestra in the early 1980s. Her output includes numerous works for the stage, symphonic and chamber music, and one of the most important bodies of art song composed in the last half of the 20th century.

The opening movement, *Elegance*, of Larsen's Symphony 4, or *String Symphony* (1998), is characterized by a lush lyricism with sudden contrasting rushes of harmony, color, and weight. Organically constructed, the movement unfolds with episodes of independent and dependent motion that yield a full-bodied, forested sonic landscape of light and shadow, incorporating dancing or swaying rhythms with a plain connection to the classical tradition. The extended middle movement, *Beauty Alone*, builds on those same basics to construct a richly expressive American tapestry of contrasting mood and shading. Echoes of Samuel Barber and the Gregorian plainchant *Dies Irae* are heard in this finely crafted movement. And the urgency and drama of the finale, *Ferocious Rhythm*, are built on spring-tight rhythmic syncopations welded to a tonal wanderlust that rivals the late romantics. Throughout *String Symphony*, I was impressed with how well Larsen writes for each section, her ear for blend and balance, and her uncanny knack for transforming thematic bits into the formal flesh of serious composition.

The latter half of the disc is dedicated to selections from two song cycles. In *Songs of Light and Love* (1998), Larsen sets the poetry of May Sarton to generate luminous, moody worlds. In the opening song, "Invocation (A Summoning)," one is impressed by the lyrical way

Spirit of '70 (Greyboy 004), a section of the liner note was devoted to technical information—from the array of microphones employed to the tape machines used. While that data has been left off of *Money Shot*, the warm, alive sound shows that the boys haven't lost their interest in getting it right.

About the only downside is that flecks of jazz/funk fusion lite à la Spyro Gyra occasionally rear their empty heads, "Instant Lawn" has long sax lines in its verses that are a bit too jazz-lite. Fortunately, Walter's forceful acoustic piano solos dispel the threat of monotony.

Perhaps this and the other Greyboys discs' greatest strength is the sense of knowing when to stop. You can get too much of a good thing, even when it's a smokin' funk jam. At 9:25, "The Yodel" is as expansive as Walter and his band get here. Beginning with a wonderfully cheesy little machine-gun shot on another irreplaceable '70s relic, the

Wurlitzer electric piano, the tune cooks from the start. A little second-line drumming from Moore adds exotic flavor, and Gastelum's effects on the sax,

plays usually more annoying than musical, are another nice touch.

Such touches are really what make this stuff go—grooves enlivened by class and taste. While *Money Shot*—and the whole Greyboy aesthetic, for that matter—may be too cool and polite for those who like their funk more ragged and raw, for me its tastefulness is its biggest attraction, other than the music's rhythmic funkiness itself. It sounds strange to say this about a funk record, but the ability to ice a groove with such astute touches as knowing where to add tasty accents, remaining conscious of the balance of retro and contemporary, and, most of all, knowing when the jam has nothing more to say, are what give *Money Shot* its soul. In the end, that's what funk, and every other worthy music on the planet, is all about.

—Robert Baird

Money Shot's tastefulness is its biggest attraction.

and shakin' booties, and you're there. As clichéd as it is, funk is, first and foremost, party music—meant for every dancing atrocity you or your loved ones care to commit. In that way, *Money Shot* is unmistakably reminiscent of the good side of those Scottish funkateers from the now-disparaged 1970s, the Average White Band. Echoes of "Cut the Cake" are everywhere.

Mostly, though, these cats are into working the same groove highway first cut and paved by James Brown's band, The JB's. In the case of *Money Shot*, because Walter is a Hammond B-3 virtuoso, another obvious source of inspiration are the jazz/funk B-3 combos of the late '60s, led by the likes of Jimmy Smith. "Rack and Pinion" shows the Walter side of the Greyboy legacy at its best. Opening with three tight, staccato downbeats that feature the trio of Cochemea Gastelum's alto sax, Walter's organ, and drums by special guest Stanton Moore (from New Orleans funk outfit Galactic), the organ takes over the groove with a delicious, squiggly vamp as the alto plays the simple melody figure over the top. Solos follow as the intensity builds. Guitarist Elgin Park and bassist David Carano complete the 20th Congress.

The sound is another pleasure. On previous Greyboy discs, as well as on Walter's first solo album,



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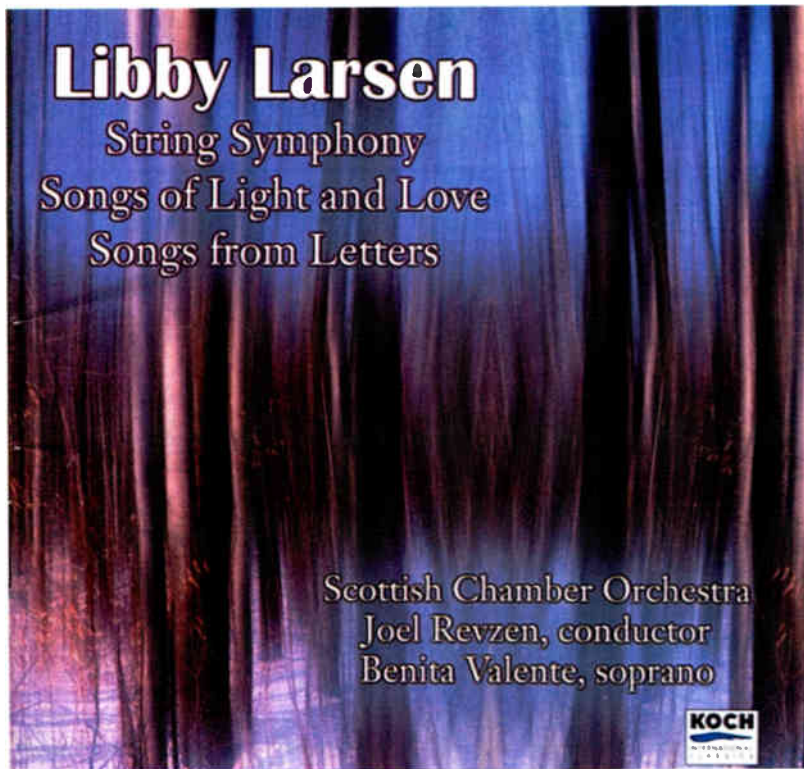
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Larsen uses instrumental color to underscore the text. There is a palpable sense early on of light entering a room, tempered by a sense of drama. In both the vocal and orchestral writing there is a sense of joint purpose.

"The Snow Light (A Rapture)" conjures a sense of light in motion. The third song, "A Light Left On (A Quietude)" is as it should be—quiet, calming, romantic, and utterly beautiful. By contrast, the fourth song, "The Fear of Angels (A Beatitude)," hurtles into a slippery landscape of fleet scampering, tremolos, and slides. Yet for all its manic motion, the song still yields up a sense of all being somehow right. The closing "Evening Walk in France (A Gynnopédie)" is a fittingly beautiful close to a lush work—a twilight pastoral of shadow and inescapable beauty mingled and woven with deft orchestrations.

The disc ends with *Songs from Letters* (1999), settings of five revealing letters from Western legend Calamity Jane to her estranged daughter, Janey. As the liner notes and the texts themselves reveal, Calamity Jane was both a rough, hard-living pioneer and a tender woman racked with guilt at being unable to raise her only daughter. Larsen's settings underscore the complexity of the letters' author, and the pained drama and tender sentiments

these rough-hewn texts evoke. The most profound of the five songs is "A Man Can Love Two Women," whose text betrays the author's conflicting sense of regret and pain, and her final, sad acceptance of her fate in love.

Soprano Benita Valente proves an ideal choice of soloist, her voice rich and powerful when needed, then pure, her manner with a lyric instinctively gauged to enrich the shifting dramatic content. Similarly, conductor Joel Revzen has immersed himself in the subtleties and riches of Larsen's orchestral palette, and, with the aid of engineer Phil Hobbs, has brought full measure to each score's potency.

— Daniel Buckley

RAMEAU

Dardanus

John Mark Ainsley, *Dardanus*; Véronique Gens, *Iphise*; Laurent Naouri, *Anténor*; Mirielle Delunsch, *Vénus*; Jean-Philippe Courtis, *Isménor*; Russell Smythe, *Teucer*; Les Musiciens du Louvre, *Choeur des Musiciens du Louvre*, Marc Minkowski *Archiv 463 476-2* (2 CDs), 2000. Arend Prohmann, Michael Gache, prods.; Yves Baudry, Bruno Ronciere, engs. DDD. TT: 2:35:43

Performance ★★★★★

Sonics ★★★★★

Rameau composed *Dardanus* in 1739 at the height of the war between the Lullistes and the Ramistes. A fantastical opera about Iphise, King Teucer's daughter, and her love for Dardanus, son of Jupiter,

Dardanus was almost universally trashed but still managed to run up 26 performances, due mostly to the thousand avid Ramistes who attended all of them. The opera was revived in 1744 and turned into something far more down-to-earth, textually speaking, with much of the supernatural hoo-ha excised. The score was also severely cut—the musicians at the premiere had complained about the sheer quantity of the music—and a few small scenes added. The performance presented here is essentially the 1739 version plus two scenes from 1744: a quite marvelous prison scene for Dardanus at the start of Act IV, and a brief orchestral interlude earlier on.

The convoluted plot, full of sea monsters and changing identities, remains a mess, but the music is glorious, and, as the musicians at the premiere were quick to point out, there's plenty of it. Highlights—at least a few that overwhelm—are the ferocious call to arms "Mars Bellone" in Act I; the scene in which Dardanus declares his love for Iphise at the close of II; Iphise's grief-stricken aria at the start of III; Anténor (betrothed to Iphise) facing down the sea monster in IV; and the ravishing duet for the lovers in the final act.

The cast is the best we could expect, and John Mark Ainsley is the ideal Dardanus. The high-flying music doesn't faze him; he still sounds virile, and is positively towering in his tragic prison scene. Véronique Gens is no less superb—her character, Iphise, goes through the opera with some very mixed feelings, and her torment is palpable. As Anténor, Laurent Naouri is manly and noble even if he is missing an occasional low note; Jean-Philippe Courtis' Magician is spooky and potent; Vénus, in the person of Mirielle Delunsch, is truly divine; and Russell Smythe is all dignity as King Teucer.

There is no praise high enough for Marc Minkowski and his Musiciens du Louvre—their spirit, understanding, and accuracy in the face of this challenge are extraordinary. This set easily replaces Raymond Leppard's 1980 recording of the work, which eliminated the prologue entirely and otherwise used the 1744 version with a hodge-podge of instruments, although Frederica von Stade's Iphise was lovely. The sound is as outstanding as the performance, with great depth to the sea-monster scene (free of hokum) and enough emphasis given to the low strings and timpani. This is an invaluable addition to the Rameau discography. — Robert Levine



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 1a: one's place of residence for dramatic performances b: a domicile or house for showing motion pictures.
 see also: sound city

home·ward (hōm'wərd) adj. & adv. To or toward home. —**home'wards** adv.
home·work (hōm'wûrk') n. 1. Work, as school assignments, to be done at home. 2. Preparatory work.

home·y also **hom·y** (hō'mē) adj. **-i·er, -i·est.** Suggestive of home, as in coziness or intimacy. —**hom'ey·ness** n.

hom·i·let·ics (hōm'ə-lēt'iks) n. (sing. in number). The art of preaching sermons. —**hom'i·let'ic** adj.

hom·i·ly (hōm'ə-lē) n., pl. **-lies.** 1. A sermon delivered to a congregation. 2. A tiresomely moralizing lecture or reprimand.

homing pigeon n. A pigeon trained to fly back to its home roost.
hom·i·n·u·s

Hon. abbr. 1. Honor
hon. honorary.
hon·cho (hōn'chō) n., pl. **-chos.** Slang. One who is in charge: boss or manager.
Hon·du·ras (hōn-dōōr'əs, -dōōr'əs) n. Country of NE Central America, mainly the Caribbean. Cap. Tegucigalpa. 3,750,000. —**Hon·dur'an** adj. & n.
hone (hōn) n. A fine-grained stone for sharpening cutting tools, as knives and razors. —v. **honed, hon·ing.** 1. To sharpen on a hone. 2. To perfect.
hon·est (ōn'ist) adj. 1. Not deceitful. 2. Not fraudulent: genuine. 3. Of good reputation. 4. Frank: sincere. 5. Without affectation. —**hon'est·ly** adv.
hon·es·ty (ōn'ī-stē) n. The quality or state of being honest. ★**syns:** INTEGRITY, INCORRUPTIBLENESS, INTEGRITY, UPRIGHTNESS
hon·ey (hūn'ē) n., pl. **-eys.** 1. A sticky substance made by bees from the nectar of flowers and other plants. 2. Sweetness. 3. Informal. —**hon'eyed, hon'ey·bee** n. bees of

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WALTON & BRUSTAD

Violin Concertos

WALTON: Violin Concerto
BRUSTAD: Violin Concerto 4
 Camilla Wicks, violin; Juri Simonov, Herbert Blomstedt, Oslo Philharmonic Orchestra
 Simax Classics PSC 1185 (mono/stereo CD).
 1968/1985/2000. prod.; eng. ADD. TT: 59:50
 Performance ****1/2
 Sonics ***1/2

recent years, releasing live concert performances from decades past. A former child prodigy whose adult career often had her barnstorming across the US with the Boston Pops as well as hopping between South Africa and Vienna with near-daily concerts, Slenczynska's fingers probably have more mileage on them than any major pianist since Arthur Schnitzler. As of 1999, this mileage is apparent in the best possible ways.

At age 75, Slenczynska no longer delivers the technical astonishments of her prime, though the bright, crystalline clarity of her sonority seems to have even more substance, particularly as caught in this straightforward acoustic. She maintains a remarkable smoothness of line that makes her performances immediately identifiable, along with a fiercely chiseled quality that dares you to think the music should be played any differently. Also, where there once might have been mere technical flash, one now hears a succession of insightful turns of phrase that dramatize the often quirky characters enshrined in the off-recorded *Carnaval*. Where some pianists find gravity in the *Pierrot* movement, Slenczynska finds eccentric light comedy. Where some pianists milk the retiring lyricism of the *Eusebius* movement, Slenczynska emphasizes the ebbing and flowing passagework that comprise the music's architecture.

Tiny rubatos are everywhere throughout this disc, often within a given phrase; the effect is of a fresh variation to every thematic restatement, whether in the wonder-filled simplicity of *Kinderszenen's* opening movement or in the climax of the first movement of Piano Sonata 2, in which her phrasing delivers great cumulative energy. Especially happy meetings of wisdom and fingers are heard in the *The Knight of the Hobby-Horse* movement of *Kinderszenen*, in which the notes splash out in waves with seemingly spontaneous force, underscored by that elemental Slenczynska bass, which seems to rise from the bowels of the earth.

Labored technical moments creep in here and there; more inward moments occasionally lack the necessary pregnant command of silence. It's here that you understand why Slenczynska had to be talked into releasing this disc. But such deficiencies are a problem only when one's ears allow musical elements to unduly overrule another. Beyond technique, this is a treasure.

—David Patrick Stearns

Camilla Wicks is not a name that many classical people know, but those who do light up, bug their eyes, or drop their jaws at its mention. Her reputation rests on a single major recording—Sibelius' Violin Concerto, recorded for Capitol in 1953—and an

old Sibelius recording was no fluke. If anything, Wicks seizes this work's technical problems with a combination of ease and near-frenetic passion, handily escaping the long shadow of the violinist for whom it was written, Jascha Heifetz. The suave but expressively unfolding opening theme is phrased with a sense of excited first discovery, giving the music a freshness that doesn't wilt under repeated listenings (which are likely to happen as soon as the movement is finished). Even in the woozy, witty second movement, there's a commanding sense of shape that highlights the breeziness of the music's



international concert career that began in the 1940s and ended in the 1950s with the first of her five pregnancies, which irritated her management and curtailed her engagements.

Wick is now better known for her master classes in San Francisco and Oslo. She has maintained a particularly close connection with the latter city thanks to her Scandinavian heritage, and was recently awarded a knighthood by the King of Norway, who apparently isn't as sexist as the British are about such things. It's from the Oslo radio archives that these performances arise, dating from 1968 (Brustad) and 1985 (Walton), and both in excellent sound.

The Walton, in particular, shows that the unforgettable intensity of Wicks'

intent without actually succumbing to it. At every turn, the pyrotechnics devised for Heifetz aren't simply mastered by Wicks, but infused with her own distinctive charisma. Though one would want to hear more such archival recordings before making any grand pronouncements, the evidence here suggests that Camilla Wicks may be America's greatest unknown violinist.

The level of preparation in these live performances is remarkable. Neither performance shows any sign of having been given only half a rehearsal the morning of the performance—those quick-solution interpretations so often heard in concert nowadays. Everything is carefully worked out to allow maximum freedom, even spontaneity, in performance—at least in the Walton,

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which is no easy assignment for anyone involved.

If I single out the Walton at the expense of its discmate, it's because I didn't connect with the Violin Concerto 4 of Norwegian composer Bjarne Brustad (1895–1978). Its language could be vaguely described as post-Britten, deriving from many without being synthesized by a strong compositional personality. Brustad can't seem to stop hedging his bets, though Wicks has some good violinistic moments that make it worth an occasional listen.

Obviously, the Walton concerto is the reason to buy this disc. By itself, it's easily worth the price.

—David Patrick Stearns

rock

LONNIE JOHNSON

The Unsung Blues Legend

Blues Magnet BLM1001 (CD). 2000. Bernie Strassberg, prod., eng.; Jim Eigo, prod.; Malcolm Addey, eng. AAD. TT: 56:22

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Performance ****

Sonics **

Lonnie Johnson is the single most influential guitarist in the history of 20th-century music—the man

who adapted the instrument from a chordal instrument used for accompanying vocalists or as part of a larger band's rhythm section to a soloist's medium employing lines of single-note runs. T-Bone Walker and B.B. King both drank at this well of inspiration, then carried the message along.

This 1965 set, recorded five years before Johnson's death, finds him near the end of his career, playing a private concert in the Forest Hills, New York, living room of painter Bernie Strassberg. The original reel-to-reel recording is of decided low fidelity and was clearly never intended for commercial release, but the power and lyricism of Johnson's playing and the deeply felt emotion of his singing are riveting. He starts off in a somber, almost elegiac mood, ruminating on life through an unbroken medley of "This Love of Mine," "September Song," "Don't Cry Baby," "Solitude," "I'm Confessin' (That I Love You)," and "I Can't Give You Anything But Love, Baby," followed by a spine-tingling rendition of "St. Louis Blues." The intimate setting only makes the ecstatic applause when he finishes more heartfelt. You know these people were spellbound at the prospect of listening to this living legend recast this material as he went along.

Johnson was a veteran of the early New Orleans jazz scene. He recorded as

part of Louis Armstrong's Hot Five in 1927, and his own "New Orleans Blues" is a magnificent tribute to the Crescent City that anyone who has ever longed for its languorous evenings can fully relate to. A magnificent "Careless Love" is followed by a stunning instrumental version of "Danny Boy," which is later topped by an amazing solo on "My Mother's Eyes."

Johnson sounds more relaxed as he goes along, drastically shifting tempo in "Prisoner of Love" and encouraging the listeners to clap along on "There's Been Some Changes Made" as he builds up to another high-octane solo. The off-hand nature of the performance adds a verisimilitude that makes you imagine Johnson just deciding spontaneously to start playing for the enjoyment of a few friends.

Despite the ad-hoc feel of the proceedings, the performance produced a dramatic climax in the spooky procession through the Earl Hines-Billy Eckstine blues classic "Jelly Jelly" and the Gershwin anthem "Summertime," and then the show is just about over—Johnson literally fades out during Hoagy Carmichael's "Rockin' Chair." Then he's gone, like a voice in the wind, taking the secrets of the blues with him.

—John Swenson

K.D. LANG

Invincible Summer

Warner Bros. 47605-2 (CD). 2000. Damian Legassick, prod.; John Smith, eng.; David Kahne, Rob Brill, asst. engs. AAD? TT: 42:15

Performance ***1/2

Sonics ***1/2

Since *Ingenue* and the end of her creative partnership with Ben Mink, who helped build that masterpiece, Kathy Dawn Lang has deflated and escaped expectations. She's acted in films (*Eye of the Beholder*), turned to dance music (*All You Can Eat*), and reveled in in-jokes and puzzlingly dull music (on the cigarette-and-drag-queen double edge of *Drqq*).

But she of the lowercase name and unmistakably world-class voice can be forgiven. The swirly, exotic *Ingenue* said all it had to say, and in retrospect probably was a one-album career move. And those who painted her as the next Judy Garland—the next "voice," an artist ready to conquer worlds yet undiscovered—were premature.

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Large and in-charge again, k.d. lang has scored a comeback with *Invincible Summer*.

and, by the sound of *Invincible Summer*, hung out in the sun looking for love in all the right places — lang, who still possesses the kind of vocal instrument that can make “Jingle Bells” sound like the Hallelujah Chorus, is back with an odd, sunny, Jobim-meets-Brian-Wilson “summer” record. Despite her best efforts to keep things lite, lang’s voice and her resurgent ability to write melodies, as heard here, once again raise expectations that her next move might be another singular artistic explosion.

As is lang’s melodramatic wont, the subject of every song here is infatuation and the beginnings of love, in all its physical, intellectual, and emotional permutations. In one of the strongest tracks, “Extraordinary Thing,” she assumes her favorite position — falling, in love — and uses her favorite new word, “thing,” which throughout the album is used playfully to describe the object of her desire. The equally winning “Curiosity,” with its rising and falling one-word chorus, zooms in on lang as she teeters on the edge of yet

another “fling” with a “thing” on a sunny beach: “This infatuation is getting out of hand / In this kind of situation one needs discipline.”

Nowhere on *Invincible Summer*, however, does lang’s re-emerging alchemy of mega-voice and solid songwriting hold more promise than in the bouncy single, “Summerfling,” easily the most engaging melody and fully realized performance she’s cut since *Ingenue*. But all this sexually charged whimsy would be for naught — as it has been in her last few confused albums — without the well-knit melodies and gauzy, glossy, wide-open production style that lang and producer Damian Legassick have brought back to showcase her voice.

For a time it looked as though the pressure to become a mega-star, to exploit her singular voice, might swamp k.d. lang personally and extinguish her career. Happily, after time off to let the urgency bleed away, she’s back in the game, this time playing only by her own rules.

—Robert Baird

jazz

FOURPLAY

Yes, Please!

Larry Carlton, guitar; Bob James, keyboards; Nathan East, bass, vocals; Harvey Mason, drums; Sheree, Chante Moore, vocals

Warner Bros. 47694-2 (CD). 2000. Bob James, Larry Carlton, Nathan East, Harvey Mason, prods.; Don Murray, eng. DDD? TT: 63:17

Performance **

Sonics ***1/2

Y*es, Please!* could serve as a test-tube experiment in a study of jazz aesthetic theory. From its birth early in the 20th century, jazz has eluded definition. (When asked “What is jazz?” Louis Armstrong gave his famous reply, “If you have to ask, don’t mess with it.”) Now it may be possible to arrive at a definition of jazz by subtraction — rather like the oft-quoted definition of poetry as “what is lost in translation.” Jazz is what is missing from *Yes, Please!*

What is the emptiness at the core of the music of Fourplay? Do not these four instrumentally competent cats make ear candy, with infectious bass hooks (snapped off by Nathan East) and glittery melodies (tickled forth by Bob James on his various Korgs and Yamahas), all synchronized like a Porsche gearbox? Is not *Yes, Please!* as sweet as Fleece’s Double Bubble, as bouncy as Anna Nicole Smith, as cute as

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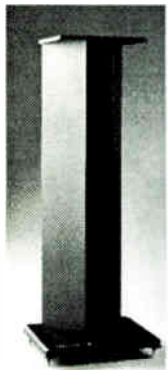
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With his modern jazz top and hard bass bottom, Elvin Jones' torrential rhythmic energy tended to overwhelm all comers.

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Apparently, significant numbers of people buy Fourplay albums and survive on a steady diet of this stuff. Would it be a triumph or a tragedy if they all, just for a brief moment, heard jazz, and felt the pain of knowing all that they had lost?

—Thomas Conrad

ELVIN JONES

The Complete Blue Note Elvin Jones Sessions

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Mosaic MD8-195 (8 CDs). 2000. Duke Pearson, Francis Wolff, George Butler, Omar Clay, orig. prods.; Rudy Van Gelder, Dino Lappas, Don Hahn, orig. engs.; Michael Cuscuna, compilation prod.; Rudy Van Gelder, Malcolm Addey, Peter Doell, remix engs.; Ron McMaster, 24-bit A/D remastering (except 9/9/72 live sessions, remastered from 16-bit digital mix). AAD. TT: 8:32:31

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Performance ★★★★★
Sonics ★★★★★

Had Elvin Jones simply ceased recording when John Coltrane died, his influence would have been in no way diminished by the passage of time. Yet some 30 years later, most impressions of Jones the drummer center around his work as the other side of the tenor saxophonist's rhythmic heartbeat, and Jones' role as a band-leader remains seriously undervalued. However, in compiling this 8-CD boxed set and in remixing much of the material here (and remastering all of it to 24-bit), the archivists at Mosaic have gone a long way toward restoring Jones' place in the transitional period between the death of John Coltrane and the explosion of fusion.

In some ways, Jones himself was consumed by the torrential energy he rou-

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—Barry Willis, Stereophile Vol. 22 / No. 11, Nov. 1999, page 127.



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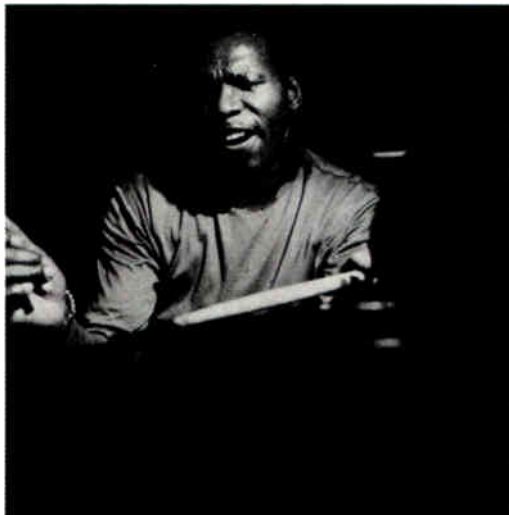
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tinely poured out during his tenure with the Coltrane Quartet. With bassist Jimmy Garrison and McCoy Tyner fleshing out the groove, Jones was free to engage the tenor saxophonist in a visceral airborne dialogue that obliterated all distinctions between front and back lines. After leaving this spiritual cauldron, Jones tended to simply overwhelm all comers. I vividly recall Art Blakey's glee in characterizing Jones' brief tenure with the Ellington band: "Elvin liked to scared them to death."

However, in chronicling the drummer's evolution from 1968 to 1972, *The Complete Blue Note Elvin Jones Sessions* demonstrates not only how this great innovator learned to harness his enormous energy, but also how, in that process, he developed a unique amalgam of jazz, R&B, and Latin sources while nurturing some of the most important, enduring talents in all of jazz.

Part of Jones' huge impact on cutting-edge jazz and rock drummers such as Jack DeJohnette, Mitch Mitchell, and Ginger Baker derived from his ability to simultaneously portray linear and verti-

cal approaches to rhythm. Jones had a modern-jazz top and a hard-blues bot-



tom—equal parts Detroit and Vicksburg. The vamp and release of "Gingerbread Boy" and "In the Truth" from disc 1 are lovely examples of how to use chant-like tom-tom accents or syncopated bass-drum kicks and blues cadences to set up a swinging release, as the drummer juggles both feels against

Jimmy Garrison's elemental 4/4 pulse.

Jones' tumultuous cross-rhythms and layers of timbre and texture also derive in great part from Afro-Cuban and Latin sources. Discs 7 and 8 feature live recordings of his working quartet of Dave Liebman, Steve Grossman, and Gene Perla, and of the numerous examples of jazz cross-pollinations, the most joyous is "Sambra," whose dancing backbeat gives way to a swinging release culminating in the drummer's virtuoso showcase—a veritable *carnaval* of rhythm. Jones dispenses with a pianist on discs 2–4 as well, teaming with the great *conguero* Candido Camero and bassist Wilbur Little to provide a shifting web of melodically inflected textures and poly-rhythms to spur on some superb multi-horn front lines. And one of the most joyous performances on the entire set features pianist Chick Corea (along with fellow fusion icon Jan Hammer, a frequent collaborator in the early '70s) in an early and much-overlooked performance of his masterpiece, "La Fiesta." Jones' sparkling inflections on the

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body and bell of his ride cymbal supercharge the groove, as he and *conguero* Don Alias respond to Corea's flamenco-styled rhythmic breaks with energy that bursts at the seams.

Disc 6 breaks with chronology to complete the cycle of studio sessions, with some surprisingly successful forays into R&B and blues-oriented materials (featuring guitarist Cornell Dupree and a flotilla of percussionists), illustrating the hot buttered funk that animates even Jones' most complex rhythmic creations. And no analysis of Jones' rhythmic stylings would be complete without mentioning his unique take on march rhythms, as in his "Keiko's Birthday March" (disc 1) and wife Keiko's "The Children's Merry-Go Round March." The latter appears in abbreviated circus style on disc 5 (with Hammer on glockenspiel), and in an expanded live version with Jones' quartet on disc 8. That live version features a truly epic drum solo full of outrageous, high-stepping rhythmic constructs that put me in mind of the Grambling marching band and circus parades in which the drummer orchestrates elaborate routines for the clowns, jugglers, and tumbling acrobats.

The level of interplay and the quality of arrangements on these sessions are so high that it seems a tragedy that Jones never again enjoyed such consistent support from a record company—a historical slight that this super Mosaic box sets right once and for all. Though there are many peak moments throughout these eight CDs, I found myself lingering with discs 1 and 2, which feature the Elvin Jones Trio with Jimmy Garrison and multi-reed virtuoso Joe Farrell. The collective interplay occurs at an exalted level, and the late Farrell's rhythmic and harmonic conceptions on tenor, soprano, flute, and piccolo are remarkable in the face of this rhythmic juggernaut, especially on a tasty arrangement of "Yesterdays." The trio is equally adept at balladry; Farrell's flute-playing on "We'll Be Together Again" is a poignant reminder of his authentic mastery of an instrument too many jazzmen simply bullshit around on. And I can never listen to Jones' swinging brushes, slow-grinding stick work, and ambient groans on "What is This" without picturing a big tiger lying on its back, moaning in pleasure as its stomach is scratched: "Oh yeah, that's the spot—ahh, ahhhh, ahhhhhh..." The recording quality of these 1968 Van Gelder Studio sessions is gloriously vivid and alive, especially Garrison's bass.

Elsewhere are the funky pleasures of "Round Town"; the furious vamp and release of "Lungs," a brief foray into the piano-trio form that offers some hint of the rhythmic and harmonic power of pre-*Miami Vice* pianist-composer Jan Hammer; the powerful horn-playing and excellent charts of the pianoless ensembles featuring Lee Morgan, Joe Farrell, and George Coleman (the edgy "Inner Space") or Frank Foster, Farrell, and Dave Liebman ("Three Card Molly," featuring Jones' runway bump-and-grind in the bridge); and the moody charts to "One's Native Place" and "G.G.," featuring brother Thad Jones on flugelhorn and the drummer's homies from

the old Professional Percussion Center in New York: Frank Ippolito on percussion, Al Duffy on timpani, and Carlos "Patato" Valdes on congas. And the cohesion and relentless drive of Jones' working group on discs 7 and 8 are all about empathy and outreach, as his young charges Gene Perla, Steve Grossman, and Dave Liebman strive to match the leader's energy, chorus after chorus. Thirty years later, Liebman captures the essence of Jones' style, substance, and spirit in his superb notes and musical analyses.

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— Chip Stern

JIMMY ROSENBERG & MORENO

Gypsy Swing

With the Robin Nolan Trio and the Hot Club de Norvege
 Refined RR 1001 (CD). 2000. Various prods., engs.
 AAD? TT: 55:17
 Performance ****
 Sonics ****

Musical trends die and get resurrected all the time, but none more so than the style usually called “swing.” In Paris in the '20s and '30s, Gypsy guitar wizard Django Reinhardt, with Stéphane Grappelli and their quintet Hot Club de France, popularized a variation nowadays called Euro-Swing. In the cafés and clubs of that day, Gypsy musicians entertained customers and jammed with the jazz bands, giving a distinctive flavor to everything they touched. In the '60s and '70s, Grappelli led a small but significant revival of the style. Now, after his death, artists around Europe — perhaps inspired by the popularity of swing among American teens and aging boomers — are once again looking to Django for inspiration. They could do a lot worse.

On this CD, the first I've seen from the recently established acoustic label Refined Records, is a generous sample of the new sound of Gypsy swing, and... well, it's got that thing. Specifically, it's got this kid Jimmy Rosenberg (real name unknown to me), who is Gypsy by birth and who lives the old nomadic way in his caravan. Like Reinhardt, Rosenberg began playing guitar seemingly at birth, and now has made his first record at age 13. He's got a blisteringly fast right hand, and his duets with Angelo Debarre show that he works and plays well with others. (Sorry, but we're talking 13 here, guys!) They also show a grasp of the swing idiom that folks like the Squirrel Nut Zippers ought to borrow for a while.

Rosenberg is one hot picker, and the Norwegians (!) can play pretty well too (check out the mouth harp on “The Gypsy Kid”), but the real star of *Gypsy Swing* is the amazing Moreno. This guitarist is so fast and clean that he probably rubs ice on the strings to keep them from melting. The best thing is that all the machine-gun bursts fit the

music perfectly, never losing the melodic flow for the sake of fireworks. I hope this disc introduces Moreno to a much wider audience than the Euro-Jazz fans who get to hear him in concert. Listen, he's got the cojones to play “The Sheik of Araby”!

After Moreno's hot licks, the disc ends with the Robin Nolan Trio's takes on Gershwin and Ellington, which are worth hearing as well. Zoot-suit rioters are urged to pick up a copy posthaste, to get a good taste of the real thing. Sound is variable, but mostly clean and natural. It's a bit off the beaten musical track, but the detour is worthwhile.

— Les Berkley

MATTHEW SHIPP QUARTET

Pastoral Composure

Matthew Shipp, piano; Roy Campbell, trumpet, pocket trumpet, flugelhorn; William Parker, bass; Gerald Cleaver, drums
 Thirty Ear TH 57084 (CD). 2000. Matthew Shipp, prod.; Peter Gordon, exec. prod.; Carl Seltzer, Chris Flam, engs. DDD. TT: 48:19
 Performance ****
 Sonics ****

Okay, so Matthew Shipp lied. Last summer the pianist vowed to take a sabbatical from the recording world after pushing out an ambitious 14 CDs as a leader in the previous seven years. He was 38 at the time and had already appeared on 50 albums, working as a sideman with a number of artists, including Roscoe Mitchell (most notably in his Note Factory collective) and tenor saxophonist David S. Ware. Citing studio fatigue and a desire to walk away from the “manic pace,” Shipp stopped to catch his breath. He felt that, as he'd already placed his basic vision as pianist-composer on exhibit, he'd give his listening audience a moment to catch up with him.

Shortly after the new millennium had dawned, Shipp changed his mind. He gathered his quartet of trumpeter Roy Campbell, bassist William Parker, and drummer Gerald Cleaver, slipped into a New York studio, and recorded *Pastoral Composure* — arguably the best, most stylistically varied record of his career. In the bulk of his previous outings, Shipp had focused on displaying his delight in playing outside the lines — zipping, pouncing, and rumbling across the keys with strong dynamics. Here he reveals much more: his willingness to snap loose from the taut free-jazz line.

Shipp will no doubt raise hackles and risk being labeled a traitor to the cause of structured improvisation for

such cool-bop numbers as "Visions" and "Progression." Shipp takes the straightahead route in these mid-tempo, tangle-free swingers (yes, swing!), sparkling and ringing the keys while occasionally throwing a curve into the mix. But it's not as if he's turned in his scrambling fingers for a young lion's paws — he's just showing his breadth of range, and that's what makes *Pastoral Composure* so good.

He opens with the compelling "Gesture," he and his rhythm mates pushing as Campbell turns up the intensity with high-note shrieks. Equally frightful is the band's deconstruction of "Frère Jacques," the ditty's pummeled melody somehow gallantly recovering from the fray — think a playtime nap turned fever dream. The open-ended band pieces work well, with Campbell often the dominant voice — though he sits out on "Merge," a fine trio performance in which the band's endless circling makes you feel as if you're being spun through a frenzy of clover-leaf traffic. Shipp goes it alone on two numbers: a personalized lyrical-disonant version of Ellington's "Prelude to a Kiss" and a tumble through the closing track, "XTU." Both numbers again prove that there's much more to Matthew Shipp than rigorously sculpted discord. It was nice of him to take a break from his break to remind us.

— Dan Ouellette

MARK TURNER

Ballad Session

Mark Turner, tenor sax; Kurt Rosenwinkel, guitar; Kevin Hays, piano; Larry Grenadier, bass; Brian Blade, drums

Warner Bros. 47631-2 (CD). 2000. Matt Pierson, prod.; James Farber, eng. DDD. TT: 55:12

Performance ★★★★★

Sonics ★★★★★1/2

Here's a breath of fresh air: an album devoted to a slower pace, with "All or Nothing at All" the only medium-tempo tune. Tenor saxophonist Mark Turner combines a pleasing tone — dark and creamy on the bottom, a pale glow at the top — with precise articulation to deliver the attractive themes to such tunes as "Skylark," "I Loves You Porgy," Bobby Hutcherson's "Visions," and Paul Desmond's "Late Lament" with clarity and feeling. Melodies are the focus here, but when Turner solos, his leaping chords, gushes of notes like bags of marbles spilled on the floor, and reflectively somber held tones speak ardently and thoughtfully. The others use their improvisational space to good effect as well.

— Zan Stewart

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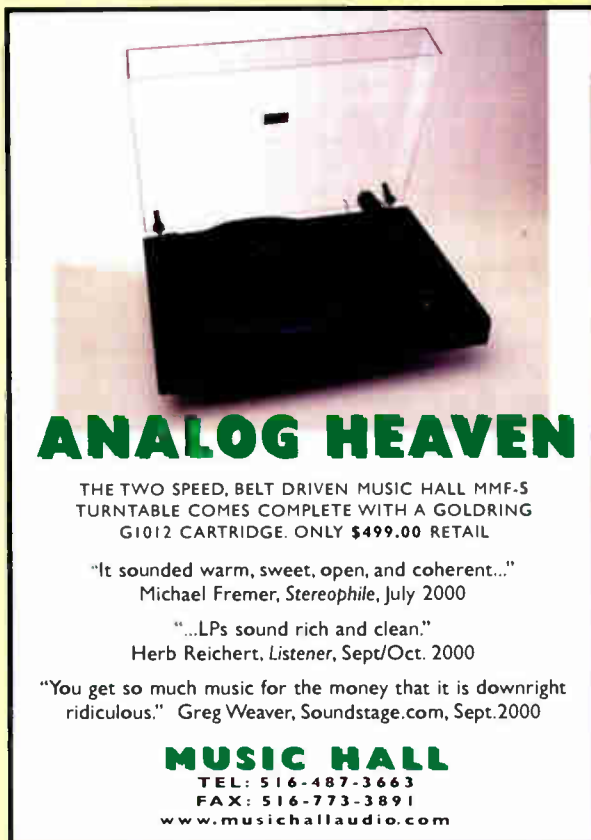
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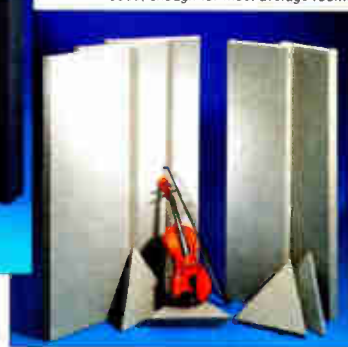
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Manufacturers' Comments

Digital Audio Labs CardDeluxe

Editor:

Thank you very much for your wonderful review of the CardDeluxe in September. We at Digital Audio Labs have always been proud of this product, and are very excited to have it introduced to *Stereophile's* readers.

I would like to take this opportunity to address a couple of the issues raised in the article.

Regarding the use of the emphasis bit, DAL has always taken the stance that the role of the soundcard is to pass audio (analog or digital) with the least possible alteration to the audio data. As such, we do not attempt to de-emphasize digital audio that has been pre-emphasized. We do allow the emphasis flag to be set for the digital output stream to allow other equipment to recognize the use of pre-emphasis. But, as JA said in the review, this is pretty much a non-issue, since we see very few (if any) recordings that are done with pre-emphasis.

The second and more major point is with the jitter measurement. The tendency when performing this type of test is to run the test waveform into the S/PDIF input and monitor the audio with the analog output. But by using this method, any jitter or noise in the CardDeluxe's S/PDIF receiver section is passed directly to the analog output. The best way to see the actual performance of only the analog output is to first record the waveform being used to a soundfile, then play that file back through the analog output, which uses the internal clock, to take the measurement. (Of course, this requires a windowing function on the FFTs, since the CardDeluxe and the measurement unit will no longer have synchronous clocks.)

I believe that if you perform the measurement in this manner, you will see tremendous jitter performance. [See my *Follow-Up* in this issue. — Ed.] I hope you are able to take the time to try this. While we feel that the performance of our digital input section is quite good, its stability on recovering the incoming clock isn't nearly as good as the onboard oscillators that generate the internal clock. We always advise our customers to use the internal clock for any critical listening or playback.

Al Pickard
President, Digital Audio Labs

Wireworld Equinox III+

Editor:

Thank you for Michael Fremer's positive review of the Equinox III+ speaker cable and interconnects in October. As usual, Michael zeros in on subtle but important differences among products, relating them directly to their effect on the music in a system context. Although we might quibble with Michael's insistence on comparing the Equinox III+ to an "extravagantly expensive" cable (at seven times the price), we were proud to see that the Equinox III+ was so close that a young musician detected "absolutely no difference" on first hearing. After Michael taught his intern how to listen more critically, he still concluded that the perceived differences did not scale to the increase in price.

We would point out that the Equinox III+ is designed to a "real world" price point and is therefore much more likely to find its way into those systems that have exactly the kinds of sonic problems (lumpy or clogged bass) that Michael feels the Equinox III+ might well solve. Regardless of the system, we believe others will hear what Michael heard; *ie*, a neutral cable with good bass articulation and an essentially flawless midrange (and wasn't it J. Gordon Holt who insisted that the midrange *must* be right, as that is where almost all the music is?).

As for David's obsessiveness, he pleads guilty. All of us at Wireworld are aware of David's love of industrial design and are not surprised that he can spot ways to improve on almost any man-made object. This is what keeps us all focused on the challenge of building neutral cables at every price point—especially those that are affordable to a wide group of music lovers.

Bill Organ
National Sales Director, Wireworld

Dynavector 20X L

Editor:

Thanks to Michael Fremer for continuing to explore the still-vital world of analog playback. Playing LPs should always be about musical excitement, connecting with art, and discovery. Dynavector Systems and myself are grateful for the attention given to what we consider the most direct and satisfying way to enjoy music at home—playing records!

Mike Pranka, Toffco
US distributor, Dynavector Systems

Hovland HP-100

Editor:

Thank you for the opportunity to have the HP-100 reviewed in *Stereophile*. We are very pleased that Michael Fremer had such a superlative experience with our preamplifier. Ultimately, what is most satisfying for us at Hovland is that Michael really enjoyed the music. We share his enthusiasm for hearing cherished recordings anew, and if our efforts aid in appreciation of this musical legacy, then we feel we have accomplished our goal.

As Michael noted, the core team members of Hovland Company have worked together on this journey—as friends, music-lovers, and businessmen—for almost a quarter century. The synergy of our individual talents and experiences is a vital part of the products we design and the company we have built. We all take part in the music listening and evaluation sessions that underlie our product-development process—a pleasurable pastime indeed!

The HP-100 joins our previously released lines of cables and capacitors, but it is really just the beginning of a family of compelling music-system components. The HP-100 has created high expectations for a companion power amplifier, and we have been refining a number of unique designs for several years. The first model, a vacuum-tube stereo chassis, will debut at T.H.E. Show during WCES this coming January. Perhaps another fire hydrant will crack next year!

Robert Hovland, Chief Engineer
Michael Garces, Co-Engineer
Jeffrey Tonkin, Industrial Design
Alex Crespi, Sales & Marketing
Hovland Company

Linn Klassik

Editor:

The Klassik is a fun machine that you can use anywhere in the home. It can be equally useful as your main hi-fi system, and you can even take it on holiday. The timer-controlled CD player, radio, and switched outputs can entertain, wake you up, welcome you home, and rock you to sleep in a wide variety of ways. Our thanks to Chip Stern, Jonathan Scull, John Atkinson, and everyone else at *Stereophile* from the Clock Radio Division at Linn.

Brian Morris
PR Manager, Linn

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McCormack DNA-225

Editor:

I wish to convey my sincere appreciation for Kal Rubinson's work in evaluating the McCormack DNA-225 amplifier. I got the sense that he really enjoyed his time with the 225, and his vivid listening descriptions really brought home the incredible sense of dynamics and involvement the DNA-225 can deliver.

KR's system contains some of the finest components available today, including Revel, Mark Levinson, Meridian, Sonic Frontiers, and Kharma. I take great pride in the fact that the McCormack DNA-225 really "delivered the goods" in a system of this stature. Nevertheless, Kal's point about the importance of system component matching was right on. While it would be great to think that you, gentle reader, could confidently purchase a new component on the basis of a wonderful review (like this one ;-)), it is still extremely important that you take the time to make your own evaluation—hopefully, in your own system. I am pleased to report that McCormack Audio dealers are some of the best in the business. They will be happy to work with you to achieve the best possible system integration and component synergy.

I want to tip my hat to John Atkinson as well for the technical side of the review. I would like to think that John had a

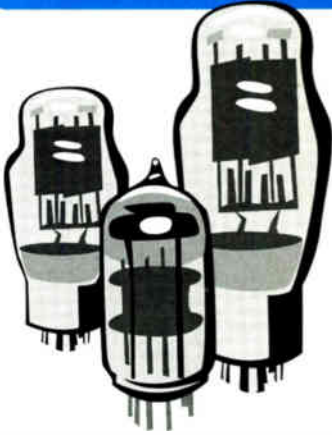
chance to actually listen to the DNA-225, but, given the state of his life these days, that is probably wishful thinking. I had to laugh when I read the words, "After a one-hour preconditioning at one-third power." Yikes! I had forgotten that the FTC was into cruel and unusual amplifier punishment.

I have to remind myself occasionally that it has been only a few years since I left the original McCormack Audio Company—it feels like a lifetime ago. I was very happy to hear that Bill Conrad and Lew Johnson had decided to purchase the company and move it to Virginia. It was an even greater pleasure when they invited me to rejoin them as the chief designer. It was clear that we wanted to update the DNA line with some worthy successors, and, fortunately, I had a few ideas on that subject. The original DNA-1 and DNA-0.5 amplifiers enjoyed a long and successful run. I am pleased to report that the new DNA-225 and DNA-125 are indeed worthy successors, having been improved in every respect. They continue the tradition of delivering outstanding performance at reasonable cost with excellent long-term reliability.

Again, my sincere thanks to Kal Rubinson for his well-considered and insightful review.

Steve McCormack
Designer, McCormack Audio of Virginia

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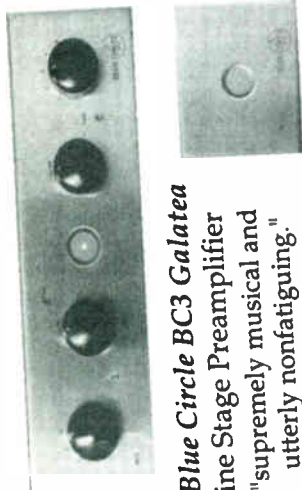
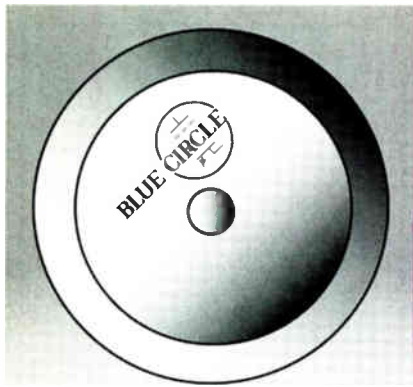
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Chip Stern
Stereophile, August 2000

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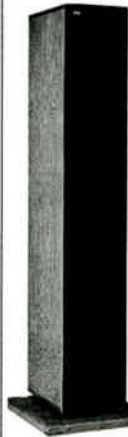
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Fine Tunes

Jonathan Scull

I must share with you an e-mail from reader Gene Radice (mediphor@pzd.net), in response to my September "Fine Tunes," on avoiding slap-echo. "Your columns are so refreshing to read," it began. Thanks, Gene, we're all in this together! "I had to laugh at your excitement over lining the listening rooms with LPs to inhibit wall reflections. Of course this is a great idea. I figure it was discovered about 1930! Why do you think all the pre-digital radio production studios sounded so good and warm? It wasn't just the ribbon mikes and tube gear. They sounded good even after condenser mikes and transistorized gear were installed. Two or three of the walls were lined with LPs from floor to ceiling. I've built a few. So are you ready for another shocker? You can use *books* too."

I smote my forehead a mighty whack. Now why didn't I think of that!

"For all those audio fanatics who have only CDs (ugh), don't tell them to use those cheap little plastic cases (probably will make their room acoustics worse)," Gene continued. "Surely the use of books will delight the eye and ear in the listening room of the intelligent *Stereophile* reader."

Of course! And Gene—please don't call me Shirley!

Then, as if by magic, another e-mail on the subject popped into my in-box, this from reader Dave Bachmann (davebachmann@hotmail.com). "A comment on your September column of cheap tweaks: I have a good-sized room—26' by 16' by 7.5'—with large windows along one length and bookcases (filled with 7" reel-to-reel tapes and LPs) along the other length. The speakers (MartinLogan SL3s) are 6' into the room and fire down the length of the room. In order to break up the reflections on the bookcase side, I have intentionally pulled out the tape boxes in a random pattern. As the shelves are 12" deep, this allows a lot of variation in the

reel boxes. The LPs are all on the lowest shelves and would intrude too far into the room (and be a bit dangerous besides), so I've left them flush. The windows are still a bit of a problem, and I leave the drapes closed for the vast majority of my listening. The imaging may not be perfect, but it's well ahead of whatever's in third place. Enjoy!"

When I related these e-mails to SpJ/La Luce turntable manufactrix and analog maven extraordinaire Judith Spothem, she hesitated a moment, then demurred, as she is wont to do.

Black Hole Pods are only \$5 a pop—buy a bunch and experiment!

"Well, I disagree weath *most* of that. It's better to deal more effectively weath the first-reflection points using proper acoustic treatments than just books or tape boxes. Otherwise you can have out-of-phase reflections from the side wall, whceh create acoustic nulls—very bad."

Well, Judy's right, as she so often is. But if you're caught in a web of domestic requirements and can't get hubby/hubbyette to agree to proper acoustic treatments, or if you just don't have the room, Gene's and Dave's modifications to the Cardas Bookcase Principle I outlined in the August "Fine Tunes" will work better than bare walls.

And while I'm tying up loose ends, I've discovered another super-cheap resonance-absorbing tweak: the Tweak Shop's Black Hole Sorbothane Isolation Pods! According to Elliot and Cara Kallen of the Tweak Shop (www.tweakshop.com), these 2"-diameter half-rounds are specially manufactured to their specifications by Sorbothane, Inc.


"Unlike the other pods out there,

we've chosen the lowest-durometer (softest) Sorbothane available. These are extremely well-suited to the task of absorbing and dissipating vibrational energy that can have deleterious effects on your audio system. Simply put four of these under a component, flat side up, and you've effectively isolated it from a wide variety of nasties!"

Elliot Kallen trumpets the Black Holes' effectiveness under tubed pre-amplifiers and phono stages, but reports benefits for digital transports and processors, too. However, "We *don't* recommend them for use under big, heavy amplifiers, where they'll simply squash down until they've lost their damping capabilities." If you simply *must* use them under the big stuff, four pods will do components weighing 15–20 lbs; add one more for every additional 5 lbs. Caveat: Keep 'em away from extreme heat, as Sorbothane can melt down to a yucky mess. Black Hole Pods are only \$5 a pop—buy a bunch and experiment!

"But that's not all! If you order now..." Ginsu Kallen reports that so many of his customers *kwelled* over the 2" by 1" half-round Black Hole Pods that he set out on a mission to find their siblings: the Black Hole Sorbothane Dots!

"These little beauties are only 3/4" across and 3/8" high, so they're ideal for places where the bigger guys just aren't practical, or for lighter or smaller components. They provide the same great vibration-damping control as their bigger brothers, and can be used in the same manner, but, because of their size, they have *dozens* of other uses. Like replacing the little rubber dots that are standard shelf supports for Target equipment racks, or as substitutes for the cheap little stick-on feet that come with many components. Here's the best part: They're \$1 each! Buy 'em by the dozen!"

What's that? You got it—the tweaking *never* ends! 

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"The magic of the HD 600s
is their midrange—a purity of tone...
that is quite special."
—Sam Tellig, Stereophile
February 1998



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even, dare I suggest, a must-own."
—Wes Phillips, Stereophile
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