HIGH-END AMPLIFIERS:
MARK LEVINSON NO.23.5
GOLDMUND MIMESIS 8

MERIDIAN D6000 "DIGITAL" SPEAKERS
PROAC & NESTOROVIC LOUDSPEAKERS
THE STAX/VOLT SINGLES SET
BOB STUART INTERVIEW
SAM TELLIG ON TUBES
MENUHIN DISCOGRAPHY
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SEPTEMBER 1991 VOL. 14 NO. 9
Stereophile, September 1991
As I write these words, *Stereophile's* writers' conference has just finished and, as described by Larry Archibald on p.258, the main subject for discussion was October's "Recommended Components." Every component recommended in the April '91 listing came under the spotlight, with often acrimonious discussion about whether we should continue to recommend it. The blood having been allowed to flow on the existing recommendations, we turned our attention to those unfortunate products that have received positive reviews in the magazine since April. During this process I frantically took notes, which I hope to have made sense of by the time the October deadline rolls around, while Richard Lehmann contacts every manufacturer whose product we intend to recommend to find out the current price.

Why do we inflict this backbreaking work on ourselves? Because I believe that *Stereophile's* biannual "Recommended Components" is the single most influential feature we publish, distilling as it does the wisdom and experience of some of the most authoritative writers in the high end. And it must be right!

It was the first time some of the writers had been exposed to the rough and tumble of compiling "Recommended Components." One such was Jack English, who makes his *Stereophile* debut in this issue. Jack may be new to *Stereophile*, but he's no stranger to the world of high-end publishing, having contributed reviews to *The Absolute Sound* before becoming one of the editorial strengths of *Sounds Like*... . .

A music lover first and foremost—he tells me he is surrounded by music in his home, his car, and his office—Jack also has a degree in electrical engineering, a master's in management, and a Ph.D in psychology. His writings will expand and improve *Stereophile's* coverage of the high end. Welcome aboard, Jack!

Finally, an erratum: Scott Nixon has pointed out that the Anodyne bass equalizer mentioned by Lewis Lipnick in his review of the B&W 800 loudspeaker in June was not representative of his current production. —John Atkinson
"But I thought you were my friend!"

Robert Harley

The relationship between audio reviewers and equipment designers is tricky at best. Reviewers judge a company's products and report their impressions to equipment-buying readers, often with significant consequences—positive or negative—for the manufacturer. Conflicts often arise because the manufacturer and reviewer have completely different agendas; the reviewer is responsible to his readers, the designer to his company.

This relationship is even more complex when a reviewer and manufacturer establish a friendship. With contacts made during visits to the magazine's headquarters with a new product, Consumer Electronics Shows, Stereophile shows, and other industry functions, it is inevitable that friendships will develop between people who share a similar passion for music and audio technology. Such friendships are not uncommon among writers for all magazines and are usually genuine and spontaneous. Sometimes, however, they are premeditated and contrived by the manufacturer in an attempt to exert influence on the reviewer.

The manufacturer and reviewer have completely different agendas.

Reflecting this often uneasy relationship, reviewers are sometimes treated according to what they've written lately rather than who they are as people. These inappropriate reactions range from expressions of anger at a negative review to the manufacturer falling all over himself to show his gratitude for a positive one.

At this last CES, I was confronted by a wide spectrum of manufacturer reactions to my...
The Mark Levinson N°28 Preamplifier is at once a continuation of the Mark Levinson traditions of musicality and enduring quality, and an entirely new implementation of technology that will set the pace for innovation in high-performance audio in the 1990's.

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Your local Mark Levinson Dealer can provide complete details on these and many other refinements in the design of the N°28.

More important, you can hear for yourself how this preamplifier tips the balance in your favor.
The reviewer's responsibility is to his readers.

recent equipment reports in Stereophile. Virtually all the comments and attitudes were entirely inappropriate, reflecting fundamental misunderstandings of the reviewer manufacturer and reviewer-reader relationships.

At one end of the scale, a manufacturer was quick to "thank" me "for saying nice things" about his product. Reviewers shouldn't be "thanked" for praising a worthy product. The product earned the positive review—it wasn't given by the reviewer. I see a strong parallel here between a reviewer and a baseball umpire: both "call 'em as they see 'em." If a runner is called "Safe" at home plate, the team's manager doesn't come out to thank the umpire—he congratulates his player for having the skill to beat the throw. Similarly, a manufacturer's marketing representative should congratulate his engineers for designing a good product—not thank the reviewer for "giving" a positive review. The umpire did nothing for which he should be "thanked"—and neither did the audio reviewer. If a product is worthy of praise and a recommendation, the reviewer is merely performing his duty of serving his readers. If the runner was safe at home, the umpire was just doing his job, serving both the fans and the interests of truth and fair play.

Conversely, a reviewer shouldn't be treated as a pariah for writing a negative review any more than an umpire should be attacked for calling the runner out. If the runner didn't make it to the plate in time, it's his fault—not the umpire's.

One manufacturer at the CES reacted to me with genuine hostility. One representative of the company completely ignored me, while another grunted with suspicion and anger when I naively greeted him. Why? I hadn't written anything about that manufacturer's products. What had happened since the last time I saw them?

Then it hit me. In the interim I had written a rave review of a competing product. This manufacturer's treatment of me was just as inappropriate as that of the manufacturer who thanked me for my positive comments. Both reactions reflect an ignorance of the fact that the reviewer's responsibility is to his readers. If a better product comes along, the reviewer must express that opinion to his readers with- out regard for either the commercial impact to that product's competitors or the personal repercussions it may cause. If criticizing a product or praising a competing product causes ill-will and destroys a friendship, then that association was based on the manufacturer's marketing strategy and not on genuine affection. The offending editorial expression merely stripped away the thin veneer of subterfuge.

But will this company's actions affect the tone of any future reviews of their products? Not a chance. If this company has a new product that is superb, the praise will be just as glowing. If the product is poor, the criticism will be no more severe than if this incident never happened. It is just as great a sin to overly praise a product from a friendly manufacturer as to overly damn a product from an unfriendly one. The cardinal rule operating here is that the readers' interests come first—before anything else. The reviewer also has a duty to the more abstract concepts of serving audio truth and maintaining a level of professionalism that elevates the entire field of subjective reviewing.

Friendships between manufacturers and reviewers are fine, as long as the manufacturer realizes that the reviewer, the editor, and the publisher will always put their readers' interests ahead of the manufacturer's. A review is an honest expression of the reviewer's opinion, not a manufacturer's marketing tool. When negative reviews are published, manufacturers will often choose to believe any reason for it—except that their product isn't up to the standards required for a recommendation. The manufacturer will sometimes privately question the reviewer's competence, attempt to publicly impugn his reputation, or ascribe political motives to the negative review. This is an unfortunate reaction because it prevents the manufacturer from realizing the product's shortcomings and weak competitive position in the marketplace. Without such a realization, the product will never improve, with perhaps disastrous effects for its manufacturer. Moreover, it's just as great a mistake for a manufacturer to believe a negative review was the result

2 Some years ago, a manufacturer told LA that if he wanted their friendship to continue, LA would have to "kill" a somewhat negative review of his product that I had commissioned. The review appeared, of course. —JA
Real power has always been in the hands of the few.

Adcom stereo components have earned a reputation among audiophiles, engineers and musicians for extraordinary performance at affordable prices. Now Adcom introduces its newest amplifier, the no compromise GFA-565, for those in pursuit of absolute power and sonic perfection, but who prefer not paying a king's ransom.

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The ability to deliver very high power into complex loads is a prerequisite for superior sound reproduction. Power supplies capable of delivering the energy necessary for high power, high-current amplifiers are massive. But there are practical limits to the size and weight of stereo amplifiers designed for home use, as well as heat dissipation and reliability constraints. Consequently, the use of two Adcom GFA-565 mono amplifiers offers optimum sound definition, detail and dynamics, satisfying even the most demanding perfectionist.

More Sound, Less Money

Like the GFA-555, the new Adcom GFA-565 sounds superior to amplifiers costing two and three times as much. It is so powerful and pure that it may be the last amplifier you ever buy, even if you upgrade your loudspeakers several times over the years. And that makes the GFA-565 an extraordinary bargain considering its exceptional performance.
of personal animosity or political motivation as to think a positive review was somehow affected by his friendly relationship with the reviewer.

No reviewer likes to write a negative review, just as no editor or publisher should enjoy publishing that review, but there is no choice when a product just doesn’t measure up. The reader should never be led to buy a product on which the reviewer wouldn’t spend his own money. The moment of truth comes when the reviewer sits down in front of the word processor. He converts his impressions of the product into words—words that will create similar impressions of that product in the readers’ minds. The review’s tone must be a mirror image of how he really felt about the product, not how he would like to have felt. Any less would be a breach of the readers’ trust—a trust reaffirmed with every subscription renewal and newsstand sale.

On the last day of that same CES, I ran into a well-respected high-end veteran in an elevator whom I hadn’t met before, but whose product I had recently reviewed. The review had been quite positive, but contained some criticisms. He saw my nametag, introduced himself, and said, “It’s nice to meet you. Thank you for—”

Oh, no, not again, I thought.

“—your thoroughness and objectivity,” he said.

“Thoroughness?” “Objectivity?”

His comments were unique in that they reflected a real understanding of what reviewing audio components is all about. If a reviewer is to be thanked at all by a manufacturer, it is only for those aspects of a review. Indeed, thoroughness and objectivity are the highest ideals to which a reviewer can aspire.

Thoroughness and objectivity—a manufacturer deserves no less from a reviewer. But can he expect any more than that—even from a reviewer he considers his “friend”?

Not in my book.

The reader should never be led to buy a product on which the reviewer wouldn’t spend his own money.

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- **AL Birmingham**: Audition
  Huntsville: Campbell Audio
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- **CA Alhambra**: Valley T.V.
  Culver City: Audio Video City
  Encino: Sound Factor
  Jacksonville:け's
  Glendale: Marconi Radio
  Lancaster: California Sound Works
  Long Beach: Audio Concepts
  Redondo Beach: Radioactive Sound
  Monterey: Monterey Stereo
  N. Hollywood: Sound Factor
  Oakland: Pro Audio
  Palo Alto: Audible Difference
  Pasadena: Sound Factor
  Redondo Beach: Systems Design Group
  Sacramento: Paradyme
  San Diego: Breier’s Sound Center, Sound Company
  San Francisco: Harmony Audio, Stereo Plus
  San Gabriel: Audio Concepts
  San Rafael: Catania Sound
  Santa Rosa: Catania Sound
  Sherman Oaks: Sherman Oaks Camera
  Tustin: Digital Ear
- **CD Avon**: Mountain Music
  Boulder: Listen Up
  California Springs: Listen Up
  Denver: Listen Up
  CT Fairfield: Audio Design
  Hartford: Stereo Shop
  New Haven: Audio Etc.
- **DC Washington**: Myer Emco
- **FL Jacksonville**: Behren’s
  Miami: Sound Components
  Tampa: Audio Visions
  Tequesta: TV & Audio Center
  Vero Beach: Audio Images
  Winter Park: Absolute Sound
- **GA Marietta**: Music Audio
  Savannah: Audio Warehouse
- **IA Sioux City**: Pflanz Electronics
- **IL Aurora**: Stereo Systems
  Chicago: Audio Consultants, Paul Heath Audio
  Evanston: Audio Consultants
  Hinsdale: Audio Consultants
  Aurora: Stereo Systems
  Libertyville: Audio Consultants
  Naperville: Stereo Systems
  Springfield: The King’s Stereo
- **IN Indianapolis**: Tone Studio
- **KS Overland Park**: Audiopart Ltd.
  Wichita: Custom Sound
- **KY Louisville**: Musical Images
  LA Baton Rouge: Art Colley’s Audio Specialties
- **MA New Orleans**: Wilson Audio
  Arlington: Audio Vision
  Boston: Goodwin’s
  Danvers: Tweeter Etc.
  Framingham: Natural Sound
  Northampton: Sound and Music
  Shrewsbury: Tweeter Etc.
- **ME Portland**: Cookin’
- **MD Baltimore**: Soundscape
  Rockville: Myer Emco
- **MI Ann Arbor**: Stereo Shoppe
  Dearborn: Almas Hi Fi
  Farmington Hills: Almas Hi Fi
  Lansing: Stereo Shoppe
  Rochester: Almas Hi Fi
  Royal Oak: Almas Hi Fi
  Saginaw: Stereo Shoppe
  Stevensville: Stereo Shoppe
- **MN Burnsville**: Audio by Van Altstine
  Minneapolis/St. Paul: Hi Fi Sound, Sound Center
  Rochester: Amalgamated
- **MO St. Louis**: Antech Labs.
  Flip’s Stereo Place
- **MT Great Falls**: Rocky Mountain Hi Fi
- **NC Charlotte**: Higher Fidelity
  Raleigh: Audio Advice
- **NE Omaha**: Custom Electronics
- **NH Nashua**: Cookin’
- **NJ New Brunswick**: Audio by Van Altstine
  Camden/St. Paul: Hi Fi Sound, Sound Center
  Rochester: Amalgamated
- **NM Santa Fe**: The Candyman
- **NV Las Vegas**: Union Premiums
- **NY Albany**: Altair Audio
  Batavia: Unicorn Audio
  Lynbrook: American Audiophile
  Mamaroneck: Audio Experts
  Merrick: Performance Audio Video
  Nanuet: Ear Drum
  Newburg: Audio Expressions
  New York City: Lyrin Hi Fi, Park Place Audio
- **OH Cincinnati**: Audible Elegance
  Columbus: Progressive Audio
  Dayton: Carlin Audio
  Dublin: Audio Encounters
  Warrensville Heights: Hoffman’s Stereo
- **OK Oklahoma City**: Audio Dimensions
  Tulsa: K-Labs
- **OR Beaverton**: Chelsea Audio Video
  Corvallis: Northwest Audio Labs
  Eugene: England Audio
  Portland: Chelsea Audio
- **PA Allentown**: Take Five
  Broomall: Hi Fi House
  Gibsonia: Listening Post
  Monroeville: Listening Post
  Philadelphia: David Mann Audio
  Shady Side: Listening Post
  State College: Hi Fi House
- **TN Memphis**: Modern Music
- **TX Amarillo**: Sound Systems
  Austin: High Fidelity
  Dallas: Audio Insight
  Ft. Worth: Marvin Electronics
  Houston: B&W Electronics
  Groove Audio Video
  Laredo: Metex Int’l
  Lubbock: Sound Wave
  San Antonio: Audio Concepts
- **UT Salt Lake City**: Audio Exchange
- **VA Falls Church**: Myer Emco
  Virginia Beach: Digital Sound
- **VT Brattleboro**: Scientific Stereo
- **WA Olympia**: The Audio Experience
  Seattle: Definitive Audio
- **WI Green Bay**: Hi Fi Heaven
  Madison: Specialized Sound
  Milwaukee: Audio Emporium

Woodbridge: Woodbridge Stereo
NM Albuquerque: Hudson’s Audio
Santa Fe: The Candyman
NV Las Vegas: Union Premiums
NY Albany: Altair Audio
Batavia: Unicorn Audio
Lynbrook: American Audiophile
Mamaroneck: Audio Experts
Merrick: Performance Audio Video
Nanuet: Ear Drum
Newburg: Audio Expressions
New York City: Lyrin Hi Fi, Park Place Audio
Orchard Park: Stereo Chamber
Patachoge: Square Deal Radio
White Plains: Lyrin Hi Fi
OH Cincinnati: Audible Elegance
Columbus: Progressive Audio
Dayton: Carlin Audio
Dublin: Audio Encounters
Warrensville Heights: Hoffman’s Stereo
OK Oklahoma City: Audio Dimensions
Tulsa: K-Labs
OR Beaverton: Chelsea Audio Video
Corvallis: Northwest Audio Labs
Eugene: England Audio
Portland: Chelsea Audio
PA Allentown: Take Five
Broomall: Hi Fi House
Gibsonia: Listening Post
Monroeville: Listening Post
Philadelphia: David Mann Audio
Shady Side: Listening Post
State College: Hi Fi House
TN Memphis: Modern Music
TX Amarillo: Sound Systems
Austin: High Fidelity
Dallas: Audio Insight
Ft. Worth: Marvin Electronics
Houston: B&W Electronics
Groove Audio Video
Laredo: Metex Int’l
Lubbock: Sound Wave
San Antonio: Audio Concepts
UT Salt Lake City: Audio Exchange
VA Falls Church: Myer Emco
Virginia Beach: Digital Sound
VT Brattleboro: Scientific Stereo
WA Olympia: The Audio Experience
Seattle: Definitive Audio
WI Green Bay: Hi Fi Heaven
Madison: Specialized Sound
Milwaukee: Audio Emporium
We regret that resources do not permit us to reply individually to letters, particularly those requesting advice about particular equipment purchases. Were we to do this, a significant service charge would have to be assessed—and we don’t have time to do it anyway! Although all are read and noted, only those of general interest are selected for publication. Please note, however, that published letters are subject to editing, particularly if they address more than one topic.

**When's the next show?**

Editor:
How about another Stereophile High End Hi-Fi Show in the Bay Area soon?

**Frank La Rocca**
Fremont, CA

_the next Stereophile Hi-Fi Show will take place April 24–26, 1992, at the Stouffers Concourse Hotel on Century Boulevard near Los Angeles’s LAX airport. As for the Bay Area, perhaps in 1993._

---JA

**It was worth it!**

Editor:
I thought Stereophile’s first essay at analog recording, _Poem_, was outstanding. _Intermezzo_ is better. Indeed, I think it may be the best phonograph recording I have ever heard, regardless of the recording medium. Now I think I understand what audiophile keepers of the analog faith are all about; I had dismissed them as inflexible. None of my many CDs can produce a sound comparable to _Intermezzo_.
Now, if only one could enjoy such recordings without the tedious and elaborate preparation, the cleaning, de-staticing, clamping, etc., that one must go through before playing the analog vinyl record. But listening to _Intermezzo_ convinces one that it is worth it.

**John Guenther**
Stuart, FL

**Sam is God?**

Editor:
Contrary to recent reports, Sam Tellig is God and the Spica Angelus is his instrument. After four months of not wanting to believe that the Spicas were actually better (ie, more musical and more realistic) than the AE-1/Kinergetics subwoofer system that they replaced (in a huge room), I discovered that the Angeli take this long to really open up in the bass and let the fundamentals flow—and this is Mahler and Wagner, not wimpy popular music.

Not only that, but multi-miked recordings are _unlistenable_ with the Angeli (eg, Solti’s Mahler 8th—I sold it), while naturally recorded performances (eg, Keilberth’s _Meistersinger_) are perfection (or better). If anyone will build the “see God” speaker, it will be Spica.

**Michael Hennessy**
Atlanta, GA

**Immoral and stupid?**

Editor:
I have given a great deal of thought considering the pros and cons of renewing my _Stereophile_ subscription. I have been a subscriber for many, many years. I wasn’t going to renew but I am going to give in one more time.

You used to be a great magazine...but I find it morally offensive that you write about the merits of $5000 tube amps...yet never discuss reliability, product longevity, or repair facilities. I’m willing to bet that at least half of your recommended component companies (during the past 10 years) are no longer in business.

With the poverty that exists in today’s America, how about becoming responsible? Review Quad, Klipsch, Shure, etc. Reward good reliable companies with excellent repair records.

Stereophile, September 1991
Stereophile, September 1991

Somehow I share one of your writer’s thoughts when he visited New York City. . . bag ladies outside the doors of a show where inside people are judging the minute differences surrounding $4000 preamps, $5000 amps, $2000 tonearms.

How immoral and stupid!

Return to reality, please!

Joe Poiré
Provincetown, MA

Should Stereophile (and the other high-end magazines) take a moral stand against high-ticket equipment, presumably no matter how well it performs? I don’t think so, being prepared to spend my own money on such components, and also feeling that bow the magazine’s readers spend their money is their own affair. Our function is only to tell you what exists and how it performs; it’s your decision whether or not to buy those components.

Do we give enough weight to reliability in our evaluations? Probably not, because we do not have the mechanisms in place to reveal that information, although we do always report every failure and breakdown in our reviews. I assume the retail community does have that information, but they’re not telling. We tried to address this concern in our 1988 survey (see Vol.13 No.1, p. 5) by asking what companies would readers buy from a second time. Unfortunately, this was the wrong question to ask because my assumed correlation between poor reliability and unwillingness to buy the same brand again turned out to be invalid. It seemed that in many cases, the purchaser’s brand loyalty outweighed the fact that the component had proved unreliable.

“Recommended Components” does discuss product longevity; we even use a symbol to indicate those products that have been recommended for more than three years. But I, too, was interested in the High End’s track record concerning company longevity, so I took a few minutes to check through my back issues of Stereophile. You should not take the bet, Mr. Poiré.

Of the 230 brands represented in the “Recommended Components” listings that have appeared since the beginning of 1982 (starting with that in Vol.5 No.4), 66, or just under 29%, are no longer in existence. That doesn’t just include small brands like Audionics of Oregon, Paoli, Phoenix, or Sonic Developments, but also large Japanese corporations such as NEC and Nikko, who no longer man-

ufacture audio equipment, and foreign-made brands that still exist but are no longer distributed in the US, such as Dolan, Benz-Micro, and Elite Townsend. That’s a pretty good record, in my opinion. Or am I wrong? —JA

JA got it wrong
Editor:
I am writing because I strongly disagree with JA’s suggestion in June that tube amplifiers should not be used with Wilson WATT/Puppies. I have successfully used an ARC D125 for some time, and more recently tried a Jadis 500 with outstanding results. In fact, I would not use them with anything but tubes.

Hans Glockner
Oxford, England

See my amplifier review in this issue. —JA

JA got it wrong again
Editor:
Although I don’t always agree with all its judgments, I’ve found Stereophile one of the most consistently readable and even quotable, magazines among the largish number I subscribe to, and have renewed my sub for the maximum.

However, I must take serious umbrage with a passing remark of JA’s in the June 1991 issue. Atlanta is not “the Athens of the South.” That title is, was, and always will be the property of Nashville, TN (also known as “Music City, USA,” even though in my personal opinion the “Nashville Sound” isn’t what I call “music”). Some say it was the Greek Revival architecture of the homes of the city’s wealthy; others attribute it to the many institutes of higher learning there (including my alma mater, Vanderbilt University—“I am a student at Vandy; our colors have set us apart: gold for the Commodore’s money, and black for the Commodore’s heart”).

Atlanta should be regarded as not the Athens, but the Alexandria or Syracuse of the South—a big commercial city that represents the progressive side of the region, but with little or nothing of its historical intellectual background.

David Hulan
Santa Ana, CA

Thank you
Editor:
It has been a pleasure writing to you again.

Haines Ely, MD
Grass Valley, CA
Those **Stereophile** monkeys!
Editor:
Ripley once said, "If a bunch of 'monkeys' were set to strumming unintelligently on type-writers, they would be bound (in time) to write all the books in the British Museum of Natural Science—from cover to cover."

What he did not mention was the difficulty of finding even one of those books! A true authentic reproduction of an "original."

Help! The 'gibberish' in Stereophile is equally discouraging! Once, in a blue moon, write a condensed two-page article (with appropriate specification listing). Make it authoritative!  

**John Winward**
Ridgecrest, CA

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**Cats'n'CRAP**
Editor:
It was a crushing blow to my ego when I opened the June issue to p.175. I was sure I was the only one to have made this dramatic scientific breakthrough. But no, there it was right in front of me, in living black and white. Misha sitting on JA's Levinson. He too obviously knows of the sonic benefits of having a cat perched atop a solid-state amp. When I first got my Levinson, Muffin (I know it's too cute a name, but you've got to see her) hopped up on the amp and went to sleep. I was going to remove her, but an amazing thing happened. Immediately I noticed the soundstage got deeper and wider, more three-dimensional, if you will. The music became more focused and transparent. Being skeptical, I quickly summoned some trusted ears to confirm this most unexpected discovery. After hours of A/B testing and double-blind studies, the verdict came in: The Muffin effect was valid.

Wondering if this effect was limited to Muffin or if any cat would work, I spent the better part of two years trying out different cats on different pieces of audio gear. Here are my results:

1) The Muffin effect is exhibited by all cats, but longhaired cats show a greater effect.

2) Two cats show a greater amount of improvement than one.

3) The effect is much better with solid-state electronics than with tubes. In the case of tube power amps, the cats sometimes catch fire.

I have plans to try to market this technology and have started a new company just for this purpose. Our company, Cat Research Audio Products (CRAP), will sell cats specially bred to enhance this effect, factory-direct for only $150 each (through retailers, these cats would sell for $300). We feel this represents an unprecedented bargain.

No one knows exactly how the Muffin effect works. Some have postulated that the electromagnetic brainwaves of a cat somehow align with the electron flow in the system, making those electrons more coherent. Others feel it is strictly a static effect induced through the cat's fur (thus explaining the observed difference between long- and short-haired cats). In any case, the ancient Romans have long been aware of the mystical powers that cats possess.

We will continue our research, looking for new feline products to enhance the musical experience. God bless and good listening.

**Jeff Bergman**
Founder of CRAP, Telford, PA

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**Cats’n’cabinets**
Editor:
Well, you've done it again! Just when I was giving thoughtful consideration to the choice of my next scholarly treatise with which to grace your hallowed pages, you hit me smack between the eyes with an issue so trivial that I can't resist tweaking you about it, so to speak.

Having had the pleasure of meeting several Stereophile pundits at the San Mateo and Santa Monica West Coast shows a while back, I had mentally assigned most of you to something of a collective status among the intelligentsia of the universe (somewhat lower than the archangels, several notches above Trekkies and survivalists, but also quite some distance from the mainstream of western European philosophy, although respectably so).

However, the June '91 issue blows your cover completely; not once, but twice. Despite numerous treatises in previous issues demonstrating the well-conceived and always impeccably tasteful listening-room arrangements of each of your erudite contributors, the photos on pages 156 and 175 expose you for the frauds that you really are. Wife Acceptance Factor my ass! No wonder the alternate term, "Spouse"
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Acceptance Factor, is so seldom used. You chauvinist clods haven’t come in from the barn yet.

I’m in the midst of changing houses, which means changing listening rooms, with all the cerebral trauma that entails. I have added emotional tribulations to that by attempting to satisfy the aesthetic requirements of my designer wife without getting a second mortgage in advance of the first. I’m firmly committed to using Target racks for stability and sonic benefits in the new order of things. But I also have an obligation to employ my cabinetmaker brother-in-law to fashion a mahogany enclosure to properly camouflage the “racky” (my wife’s term) appearance of the equipment while still providing adequate ventilation. I am also obligated to have him construct a separate cabinet to house large numbers of records, CDs, and tapes. Guess what novel feature it will have: doors! You know, those solid, flat things with latches and hinges that may be used to hide ill-favored objects from view.

Judging from the June pictures, LL and JA not only have little conception of the cabinetmaker’s art, they probably each own only two pairs of socks and eat their meals over the sink. The only reason Misha the cat condescends to grace JA’s listening room is probably because the power amps are usually warmer than the hood of the car. Come on, fellows, this is one instance in which I was happier to have you describe things in print than I was to see them. Do you realize the trouble I’m going to be in when my wife sees those photos? She already suspects I’m going to pull a fast one and sneak in bare Romex, orange crates, and 50 square yards of Sonex and nail it all to the vinyl! Wall coverings. A thousand words would have definitely been worth much more than either of those two pictures. Keep up the good work, guys, but do me the favor of giving up the pretense of being civilized!  

Jim McClanahan  
Clovis, CA

Yup, who would want all those naked books and LPs in their listening rooms, even if they do offer a dispersive, acoustically optimum surface?  
—JA

No shortcomings?

Editor:  
Too bad Lewis Lipnick has to tighten 15¢ screws to make his $15,000, “no shortcom-
ings,” speakers sound [good]. Obviously his mistake was not to order the $18,000 version... or maybe build a Heathkit.

Leo W. Lakritz, MD  
Beloit, WI

Really?

Editor:  
Ever since the time of Edison, listeners to reproduced sound have claimed to hear perfection. Lewis Lipnick stands in a long line of the deluded. His review of the B&W 800 loudspeaker (June ’91), which says, of the 800’s shortcomings, that “there are none,” has hardly analyzed the product.

Record, if you will, Mr. Lipnick, any familiar spoken voice (with any creditable microphone and recorder). Because the human voice is the most familiar of sounds, the one we hear most often, it is an excellent test of loudspeaker accuracy. Do you notice, on the 800, that the voice fundamentals are diffuse, split as they are between two woofers several feet apart? And notice, too, the shift in harmonics to the midrange drivers, now made slightly vague because there are two of them. Even though the upper midrange is attenuated in one of them, two drivers producing the same sound in the lower midrange will be less focused than one. Notice, too, the shift in coloration when the sibilants move to the tweeter. Metal-dome tweeters, in my opinion, commonly show a coloration shift when paired with nonmetallic drivers.

And for those who would like to test the accuracy of speakers Mr. Atkinson suggests are comparable to the 800 (models from Apogee, Infinity, Thiel, and Wilson), hear the same familiar voice on all of them. Notice how unexpectedly different it sounds on each one. No more than one of them can be right. Almost certainly, all of them are wrong.

Mr. Lipnick may find the B&W 800 to his liking, but to say that its output is audibly identical to its input (the requirement for perfection) is nonsense.

Lewis Coopersmith  
Philadelphia, PA

The miracle drug

Editor:  
As I sat in my bed recovering from major abdominal surgery, a fabulous new miracle drug arrived: the June 1991 issue of Stereophile. One look at the B&W 800s on the cover and I knew I was in for some fun. Fun, unfortunately,
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HFI Review (Jan ’91)

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Stereophile, September 1991
can be painful after abdominal surgery, as laughing is somewhat difficult. Undaunted, I decided to push on.

A hearty chuckle was derived from the appearance of the 800s. Clearly the WAF has been pushed to new limits. In the picture on p.156, LL looks like he's about to be clamped in a huge vise. As for the review, it's wonderful to know that once again the limits of reproduction have been pushed up another notch. Even if one can't afford the price of these monsters, the technology employed will surely begin to trickle down to more affordable models, and that's what counts.

My spirits picked up further after reading Corey Greenberg's heartfelt and richly deserved tribute to Leo Fender. As the once-proud owner of Stratocaster number 0125, I can testify that CG has hit the nail right on the head. Ain't nothin' like a Strat!

The David Manley interview spread a warm glow all over. This guy really cares!

Things were feeling better and better, until finally disaster struck! An uncontrollable bout of hysterical (but painful) laughter erupted during the reading of Corey Greenberg's review of Los Texas Tornados. I was literally howling with simultaneous pain and pleasure. What a gem! Please give us more Corey—what a diamond in the rough! Arthur Shatz
Bayside, NY

Leo & Les
Editor:
With all admiration for Corey Greenberg's vivid writing style and more love for Leo Fender than I can put into words (when asked to toast "absent friends" at my sister's wedding six years ago, I toasted Leo), I feel compelled to write regarding the tribute published in your June 1991 issue.

It is understandable that Corey's heated testimonial never finds an opportunity to mention Les Paul. Yet it was he who invented the solidbody guitar. Having been privileged to play a 1945 Les Paul, I can testify that it kicks and screams and hugs and wails—good action, too. Guitar groupies will recognize its outline as the more recent Gibson SG (SG = "Solid Guitar"). Les did more to "piss on" the semi-hollow body design than anyone: he single-handedly uninvented it. That old Les Paul or SG was a double cutaway too—a decade before the Stratocaster debuted.

The idea that rock'n'roll waited for Leo Fender before turning the electric guitar loose on the streets of youth is so wrongheaded, I'm still reelin' and a-rockin'. Not only did Leo's handiwork predate rock by more than half a decade, but rock'n'roll guitar's Zeus had to be Chuck Berry, given his prodigious and prodigal brainchildren. The Great One played his Gibson ES-series guitar like ringin' a bell—which is not unlike what Chuck's axe sounds like in its forward pickup position. Besides, those of us who had our hearts torn out and eaten by rock'n'roll guitar, who just bad to play right now right tonight, primarily took what we could get. Example: my ancient 3-pickup Japanese Teisco, $29.95 at Builder's Emporium, reproduced music, the dog barking, the vacuum cleaner, you name it. The other kids thought I was lucky 'cause I didn't have to build my own. The Telecaster was completely unsuited to be a rock guitar, then as now. But Chuck's big box—yeah. The Stratocaster didn't really take off until the 1960s, despite that Buddy Holly owned one the first year it was available (1954).

I'm surprised that the Stereophile jazzheads didn't have a collective cool collapse at Corey's contention that Gibson guitars do not reflect as great a concern for sound as pre-CBS Fenders. I doubt that Lee Ritenour or even Jimmy Page could've gotten past garage-band status if their guitars sounded obviously worse than something less expensive. But let's drop philosophical introspection: the fact is, guitarists choose their instruments almost exclusively on the basis of sound. As easily as Leo's axes let one develop chops, that big fat honkin' Gibson or Guild design never slowed down George Benson, never dehumidified Wes Montgomery's smoky dark nightclub tone, didn't hold back Alvin Lee of Ten Years After or, for that matter, Ted Nugent. And never once have I heard any of these artists complain of the sonic characteristics of their pickguard finish's molecular structure.

My last point is more in the nature of an expansion than a rebuttal. The testimonial never sufficiently explains Leo Fender's greatest contribution to electric guitar: that Teflon-fast early Telecaster and Stratocaster neck. If I may digress momentarily, the original Fender neck is really at a significant disadvantage to the Gibson because the former has 21 frets (up to C# in standard tuning) while the latter sports 22
Proceed digital components. Innovative expressions of technology dedicated to a singular goal: reconstruction of the musical information encoded in the digital medium with convincing fidelity.

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Les Paul's role in the evolution of the solidbody electric guitar, though it was Leo Fender who was the first to make solidbodies widely available commercially, in 1950. According to my memory, reinforced by the updated edition of Tom Wheeler's American Guitars (Harper Perennial 1990), though Les Paul had been privately working on the design of solidbody electric guitars since the '30s, these weren't built commercially. However, Paul did use Epiphone's tools to make the original "Log," which I assume is the guitar once played by Mr. Greenblatt, the lucky dog. (The photo of the "Log" on p.156 of AG shows a conventional cello-style body, however.) According to Ted McCarty (who became Gibson president in 1950), as quoted in AG (p.140), "Fender had come out with the solidbody, or the plank guitar... We finally came to the conclusion that [Gibson] had better get on the bandwagon." The original mass-produced Gibson Les Paul model (introduced in mid-1952), like the Telecaster, had a single cutaway. (The almost-always-cherry-red SG was a double-cutaway design, but was not introduced until 1962, some years after the Stratocaster, and was disowned by Paul, who said "a guy could kill himself on those sharp horns.") And though it's true that many players, such as Chuck Berry and B.B. King in the US, as well as Pete Townsend in the UK, played semi-hollowbody instruments, I agree with Corey's general point that it was the solidbody electric guitar that was the vehicle for the rock revolution and Leo Fender's combination of solidbody design and mass-production techniques that largely fuelled its engine. —JA

Screw the English majors
Editor:
Re: Corey Greenberg's requiem for Leo Fender, Stereophile, June '91: So screw the English majors, I just loved it!

R. Gloria
Granada Hills, CA

Send CG back to school
Editor:
It is a well-known fact that persons who habitually use lewd words in their speaking and writing have profound deficiencies in the command and use of the language. The habitual use of lewd words in spoken and written form can also indicate low self-esteem or poor self-concept. I am sure that in the case of Mr. Corey...
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Greenberg's writings it is one or the other. I suspect that it is the latter.

If the first is the case, then Mr. Greenberg should return to school where he can gain command of a powerful vocabulary and be further retrained for his chosen line of work. I am confident, however, that Mr. Greenberg can write a good expository review in a tasteful and commonly acceptable fashion, without having to return to formal classes in school. This leads me to believe that maybe the cause of the lewd words in Mr. Greenberg's most recent offering is low self-esteem.

Somehow, we need to get through to Mr. Greenberg that his writing is important and valuable to his readers and that the use of lewd words in his writing only disparages the quality of his column. Maybe you, as his editor, might suggest he listen to Britten's Young Person's Guide to the Orchestra or some Prokofiev as his source material the next time he is reviewing turntables. Maybe, as his editor, you could even insist that he do this! You might suggest some reading for him as well, such as Donald J. Grout's History of Western Music, or some of the writings of Leonard Bernstein or Aaron Copland, to help him improve his understanding of music. These suggestions could help cleanse his writing style and maybe even improve his self-esteem.

However you deal with this challenge, Mr. Atkinson, I expect as a current subscriber that the writing in Stereophile will meet and exceed the highest standards of professionalism in journalism. The equipment and music your periodical reviews is the best; it follows that the language used to review the equipment and music also be the best. 

Fred Lindgren
Milwaukee, WI

Don't insult Mr. Collloms

Editor:
The presence in your July 1991 issue of an article by an individual named Corey Greenberg next to one by Mr. Martin Collloms was an insult to Mr. Collloms, a distinguished and highly respected writer.

The gutter language and ample references by this Greenberg creature to his bodily functions were utterly and thoroughly insulting to your readers.

I fail to comprehend the need for the presence of obviously inexpert writers who appear to view themselves as nightclub stand-up comics (with language to match) rather than serious writers with something to say which may be of interest to your readers.

The turntable article by Greenberg gave no indication whatsoever that this person possesses any background, either musical or in audio, which would qualify him as a writer for your journal.

Unlike so many other readers who, disgusted with the downward direction of taste being displayed in Stereophile, choose to terminate their subscriptions, I do not intend to cancel, but please be assured that if this level of uninformative filth continues to be published, I shall certainly not renew again.

Thomas G. Taylor
Columbia, SC

The creature's credentials are enumerated in some detail on p.191 of Vol.14 No.4. —RL

Perhaps it might come as a shock to Mr. Lindgren and Mr. Taylor that while I support the use of as wide an English vocabulary as possible, I don't feel it any particular responsibility of Stereophile's to try to preserve the "quality" of that vocabulary. Neither do I want to act coy by substituting, for example, "bull...t" for "bullshit" when "bullshit" is the appropriate word for a writer to use. My criterion is primarily to use language that reflects the norm of the manner in which readers speak and think so as to maximize communication of what our writers have to say. All of the words that readers have recently objected to in Mr. Greenberg's, Mr. Tellig's, Mr. Lehnert's, and my writings have been used on network television about as infrequently as they appear in Stereophile; I therefore conclude that our usage is about correct for modern American society. What I am concerned about, however, is the quality of our writers' use of English and the clarity of expression of their thinking; a considerable degree of work, both from the writers and from the editors, takes place to further this end. Readers may be surprised to learn that the ultimate test RL and I apply to a questionable piece of prose is to read it aloud. If it passes that test, which implies that it is the best way of expressing the thoughts behind the words, we publish it even if it does then run the risk of being regarded as "uninformative filth" by those whose own standards are "higher" than the norm. —JA

Stereophile, September 1991
The sole value of an audio system lies in its ability to evoke emotional pleasure through the accurate reproduction of a musical event.

Research by the community of individuals known collectively as Wadia, indicates that less than a billionth of a second of disturbance to the time-based information of the digital audio signal will cause listening fatigue and aural stress.

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Hear it for yourself at an authorized Wadia dealer.
Hats off
Editor:
Hats off to whoever hired Corey Greenberg. Not only is he a brilliant writer, but I find it easy to relate to anyone who can judge a $1200 amplifier on the basis of Flea's (of the Red Hot Chili Peppers) bass playing. He's definitely a major reason why I just extended my subscription.

Beth Garfield
Oak Park, MI

Why review records?
Editor:
I'm a recent subscriber, so I come to these discussions late and without knowledge of the first 13 volumes' worth of opinions. Immediately, though, I am wondering what is an equipment-report periodical doing reviewing the much larger field of musical content; ie, albums. Granted, other magazines such as Stereo Review, Audio, the esoteric classical tomes, and even the upstart mobile audio rags all try to direct me to new musical finds. But why would I entertain their critiques when Rolling Stone, Musician, and the inciting CD Review have much better credentials and do a far better job of it?

I was hoping that you folks would stick to your advertised agenda and simply investigate and judge high-end stereo components. If I were interested in classical music, why would I need to have you tell me about the latest Simon Rattle or Roger Norrington interpretation? My metropolitan newspaper has already advised me. If I were into jazz, wouldn't I have already seen Shirley Horn on Carson or read about her in Drumbeat? And if I was a pop musician, wouldn't I have already bought the Dylan Bootleg box three months ago, and read about it in I.C.E. six months ago?

Stereophile, don't try to be all things to all people. Don't "go" large format (which you seem to be headed toward), and don't review mid-fi equipment. Analyze what you know best, even if Sam Tellig writes a balley review. And Corey Greenberg—maybe he needs a job with CD Review. Put the Cary, or otherwise amp-of-the-month, back on the cover and get on with it.

Cheers.
Byron Thompson
Modesto, CA

Stereophile currently offers more pages of equipment reviews than it ever has, so readers should not be concerned that our record reviews steal space from the "advertised agenda." We review records for two reasons. First, because any description of the performance of the hardware is sterile without being put in the wider context of the music to be played on it. Second, because I feel our record reviews in general to be more informative, more informed, and better written than the majority of those in any of the publications you mention (even Musician, the only mass-market music publication to have any literary merit, in my opinion). Compare Stereophile's and Rolling Stone's coverage of the Dylan set, for example. Richard Lebner puts together a record review section for Stereophile that I myself would want to read as a reader, and no editor would or could want for more.

—JA

Left-brain, right-brain . . .
Editor:
In the October 1990 issue of Science, Dr. Doreen Kimura, of the University of Western Ontario, is profiled for her research involving left-brain, right-brain differences. While most of the article is devoted to female vs male neural responses to such things as estrogen levels and left vs right hemisphere size, early work on her dissertation involved auditory responses.

Using a dichotic listening test—in which the left ear and the right ear are simultaneously played a different series of numbers—she discovered that neurological patients reported that they heard better with the right ear.

Because it had been established that the right ear communicates more directly with the left hemisphere of the brain, Kimura decided the left hemisphere was processing the incoming information more completely than the right. Her colleagues challenged her conclusion, calling it a fluke. But Kimura persisted. "There was no way I had done something wrong," she laughs. "So I just went ahead and tested quite a few normal people and found a very strong right ear effect." Then, using tapes of melodies, Kimura found that her subjects recognized tunes better with the left ear, which connects mainly with the right side of the brain.

Those studies provided evidence that the two brain hemispheres process different kinds of aural information—supporting longstanding evidence that the left hemisphere processes language and the right hemisphere processes...
ENERGY loudspeakers have become the personal favorites of discriminating audiophiles the world over. Our Dual Hyperdome™ tweeter is the key reason why ENERGY recreates the original performance with uncompromised accuracy. With more than $1 million in development, it exhibits better dispersion than any other tweeter on the market today. That's also why our new ENERGY 22-Series incorporates the revolutionary SPHEREX™ baffle. Its smooth, sculpted surface angles gracefully out of the way of direct radiated sound. Diffraction is eliminated for superior soundstage and positional imaging. Simply put, the ENERGY 22-Series defines a new standard in sonic precision. Take a test drive today. Your ears will thank you.
nonverbal information, including spatial cues.

So, how well do your speakers image, and what happens when one faces away from the music source? I found that my right ear is much less "bright" than my left.

By the way, Dr. Kimura is a big Rolling Stones fan.  

Marc Sabb  
Optical Science Center, U of AZ, Tucson

Gourmet sound

Editor:
It is with sincere gratitude that I write this letter to your magazine, especially for its editorial position. You have provided me with enough food for thought to make a gourmet out of me. I would like to return the favor by attempting an understanding of why some people's ear/brain/mind perceives sound a certain way and other listeners another way. Or, why do some scoff at sounds they don't hear.

It would appear that two factors are at work in the perception of musical enjoyment: first the automatic, childlike appreciation of sound as it strikes some wondrous natural chord in our psyche (right-brain), and second, a learned, honed, and tutored growth (left-brain) that, coupled with advancing pleasure (both brain halves working together), brings about a highly advanced skill in both musical judgment and enjoyment.

The genesis of this reasoning was a drawing text that I used for one of my photography classes. (Interestingly, photography also has its antagonistic extremes: specification freaks who question grain and soft focus vs the visual results are what is important types, and all those in between.) I had often struggled with the question, "Sir, how do I find and record an interesting subject?" Wondrous classical pictures have been made of cigarette butts and squashed cans, and yet most people's perceptions are not finely adjusted to "see" them until a master like Irving Penn shows us all what we were ignoring. It was this perception that I needed to turn on, as much for myself as for my students.

The basic premise of the uninitiated is that we all see the same and all hear the same! Yet the author of the above text clearly proved that we do not, and importantly, we all, except for the artist, still "see" in the same manner as a six-year-old! It makes the telling point that if we saw differently, we would draw differently; but almost without exception, western civilization adults stop learning to "see" at the beginning of the early school years. It is my feeling that many also fail to develop their musical skills at the same time for the same reasons. Ironically, it seems that we start to build our left-brain skills to the detriment of the right brain. We stop advancing in both music and drawing skills when we are told to "stop all that childish nonsense and grow up, real men and women don't..." etc., etc. To reverse this lifetime of ignorance, the author of the book provides exercises on how to "shut down" the dominant left side to allow the right side access to the visual perception system.

I had been trained as a draughtsman, but could not draw as an artist does. I can now! I also could not play a musical instrument, though I knew the names of the notes and could identify the sounds and shapes of all kinds of instruments. (I would like to say I can now play, but it is very slow going; I'm learning the organ.)

How did this process work out with my students? They learned that their perception was faulty, and methods to correct it. My engineering students learn how to troubleshoot using their right brains to solve complex electrical and mechanical problems on production equipment, and also to read blueprints very quickly by "seeing" correctly.

My perception of sounds has, however, not changed very much, and I had believed that years of not "hearing" recorded sounds with a discerning ear were responsible. I now believe that I have not learned to shut down the dominant part of my brain to allow me to hear. It is very likely that the right brain of the "Specifications The Same, Therefore it Must Sound The Same" camp are starved of stimulus of the correct kind. Not that listening to live music is necessarily the correct stimulus; I must admit I don't know what would be correct. I do know that I do not seem at present to be able to identify or quantify sounds that others more fortunate can. That these sounds register on my brain is indisputable. When it all comes together, I find I cannot read while listening (I read compulsively and voraciously), I find my toe is tapping, sometimes I'll get up and boogie like a crazy teenager (I'm 51). I will find that hours fly by as I remain in the right-brain reverie mode, totally absorbed. When I

1 Betty Edwards, Drawing on the Right Side of the Brain. Published by Tarcher.
This is especially true in the audio field where everyone, from studio engineers to manufacturers and reviewers, needs a solid benchmark for accurate sound.

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If you appreciate music, audition the Reference 105/3's. For any audiophile system, they are "standard" equipment.
check with others who hear clearly the lack of
grain, veil, grunge, or whatever, they inevita-
ably ask, "What did you change now? It sounds
much better!"

To illustrate that a real music background
does not provide the necessary synaptic de-
velopment, consider my own musical growth:
I was introduced to recorded and broadcast
music as a war baby in the bomb shelters of
southern England, a means of soothing trou-
bled parents and children alike. Later, live music
followed as my father (ukulele), Uncle George
(violin), and Cousin Pat (piano) created warm
evenings, especially when coal was in short
supply! Our two families lived in a house sub-
divided into upper and lower flats with thin
wooden floors and walls, so practice was also,
at times, unwillingly shared.

Father had brought home some spoils of war
(from a bombed university, he said), including
a 78rpm drive that had the earmarks of exotic
manufacturing. It was his desire to install this
in the windup player with the metal folding
sound tube and weighty pickup, to reduce the
flutter, and so start a lifetime of audiophile
interests. (It was on this pickup that we used
rose-thorn "needles" to preserve the record.)
Further developments in sound equipment fol-
lowed as our family prospered: transcription
'tables, granite plinths, a professional Grundig
open-reel recorder, transmission lines, and tube
amps with special covers for the tubes.

But the reality was always there to remind us
that we fell far short! The theater with a pit
orchestra or an organist who would rise up
from the theater stage like some mythical sub-
terranean god. Concert attendances were fre-
quent, especially live band-shell concerts in
the park. (See what you do when there is no TV?)
But, sadly, almost no chance to hear large sym-
phony works due to the small size of the local
halls. Jazz was another story, however. Local
pubs and clubs abounded; in fact, you could
hardly escape local jazz talent, even if you
wanted to, which I didn't, for street "buskers"
were to be found at any lineup or event that
attracted a crowd. Friday nights, Saturday after-
oons through to early Sunday morning were
replete with real music. Sunday night, however,
was another story: the radio was king, BBC
concerts and sing-along music were our even-
ing fare, and the Palm Court Orchestra took
special precedence. It was during these ses-
sions that Dad and I would talk "reproduction"
stuff, much to the annoyance of my mother,
who was trying to listen to the program.
(Although how she heard over the inevitable
click-clack of her knitting needles is hard to
say.)

Now and then Dad would bring home a new
recording that Decca had just produced and try
it out, but then he would point out its short-
comings, and there was no magic; we always
found ourselves, sooner or later, talking dur-
ing the music, as we did during the radio music.
We never spoke during real performances
unless something special happened, or we
were struck by a thought that couldn't wait. We
didn't sit on the edge of our seats when listen-
ing to recordings either, yet I vividly remem-
ber at concerts that I would find at the inter-
mission that I had become mysteriously and
suddenly numb in the nether regions. Obvi-
ously sometime during the performance of live
music I had moved to the edge of my seat, but
totally unaware of this until the intermission.
On several occasions I found my legs had gone
to sleep and could not stand, so entranced was
I by the performance.

It seems to me that because I never associ-
ated recorded music with the "hair standing up
on the back of my neck" effect, I always some-
how accepted its shortcomings, and didn't look
for or hear the problems, or indeed the differ-
ences. Today it is different. I rarely can get to
a concert, and do not object too much (big
bucks for a poor seat and, worse, poor sound).
I made the effort for Tafelmusik Baroque
Orchestra and Vivaldi in a small hall (wonder-
ful, just magical). I dislike most club jazz for its
insistence upon awful PA sound reinforcement,
and the megawatt popular concerts of the likes
of Neil Diamond or Phil Collins are almost
always held in hockey or football arenas here
in Canada. Good for watching, bad for hear-
ing! However, I find that I'm now very tolerant
of recorded sound.

My prime source is a Denon DCD-1520,
although I have a turntable with a reasonable
pickup (and get satisfaction from it). I can't be
bothered with the fuss. (Also, my LP collection
has not been cared for; it has been played to
death by everyone in the family and their
friends.) I haunt the local high-end stores hop-
ing to hear magic, but no such luck. I do not
believe all the stores fail to bring about the
required symbiosis, for our local one, Audio
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Larry Greenhill

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Larry Greenhill
Stereophile, Vol. 12. No. 10

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demonstrated much of your Class A equipment, and others rave. Me? I listen and listen, but I don't hear what they claim to!

Do I hear important differences between cables? Not yet. Do I hear differences in electronics? Only when they are major, and sometimes only when they are pointed out to me. Am I worried? Sometimes, especially when I read JA or JGH. I would love to know what they hear. When I read PWM I feel a kindled spirit and sigh a sigh of relief. Where does that leave the dilemma of specs vs sound?

First, it would seem that all hear valid major differences, like a violinist hears when playing a Stradivarius vs a school band fiddle; even those with untrained ears could hear them with greater concentration. Second, an education may heighten one's awareness to more subtle differences. But if the left brain/right brain inter-relationship has not made those synapses, then the listener's perception will be immature—not for want of trying, but due to the wrong kind of learning. For it must be a special kind of listening that sharpens the hearing, like the artist who sees the same item but perceives it differently, and hence can draw it, because his right brain "sees" in a different way. The raw data that the eye/retina/brain receives are common to both the artist and "ordinary" person, but—and it's a big but—the artist's mind "sees" things differently, and cannot see it the way the ordinary person sees it.

I sincerely hope that there is a special person out there who, like the author of the drawing text, can bring it all together as an aural package, with an effective learning process so that I can learn to hear a different way. I'm not sure that I would get goosebumps from my musical recordings as I get from live events, but it sure would be nice to close the gap using my own brain again, as I did in drawing.

David Mayfield
Ontario, Canada

The difference between an "objectivist" and a "subjectivist" is that the latter at one time in his or her life had a mentor who could show them how to unlearn enough to be able to listen, how to let the holistic right brain take precedence over the analytical left. —JA

Knee-jerk criticisms?
Editor:
I found D.R. Martin's recent interview with maestro Edo De Waart (Vol.14 No.4, p.221) most interesting, but I found some of the interviewer's comments about the supposed blandness and homogenization of current classical music performances of the present day and the supposed brilliance and individuality of past performers to be quite irritating. In my opinion such notions are utterly false, unfair, and cynical. They show a knee-jerk tendency to assume that today's classical performers lack the flair, imagination, and individuality of great names of the past.

I have been observing a distressing tendency among today's classical music critics to use such questionable assumptions as an excuse to belittle and dismiss the performances of many distinguished present-day conductors, instrumentalists, and singers who have given me, at least, an enormous amount of pleasure.

Of course there were many great musicians in the past, but I reject the idea that those of our time are intrinsically unable to equal the great ones of bygone years. Having heard many performances from old recordings as well as live performances and records within my time (I am in my 30s), I hear absolutely no evidence that older is better. It is not that simple.

Also, Martin's assertions that our symphony orchestras have become nothing but museums, and that new music is generally neglected, are specious. In recent years, a wide variety of new works have been premiered by numerous composers, far too numerous to give even a partial listing in this letter. There has always been resistance to new music; many of the established masterpieces of the standard repertoire received anything but enthusiastic receptions at first by audiences and critics.

One correction: Mr. De Waart states that the noted conductor Rudolf Kempe (1910–1976) never conducted in America. This is incorrect: he in fact conducted at the Metropolitan Opera during the 1950s (his conducting of Strauss's Arabella was much admired), and toured the US with England's RPO in the early '70s.

Robert Berger
Levittown, NY

A bone to pick with the Dead?
Editor:
I don't think your readership is well served by Jon W. Posey's review of the Grateful Dead's Without a Net (Vol.14 No.3, p.211). Like many pop music critics, he apparently has some bone
There are those people who say that to choose a hi-fi you have to understand the jargon, and know all about power ratings and performance figures. In our opinion, these people are talking nonsense. Because specifications don’t tell you what a hi-fi actually sounds like. The only way to find out is to listen. Go to your Linn dealer, and you can compare our hi-fi with a selection of other good equipment. You don’t have to be an expert. You’ll find it very easy to hear the difference. To be honest, the best system will stick out like a banana in a hi-fi ad.

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to pick with the Dead. I, too, was somewhat disappointed by WOAN, and for most of the same reasons that Mr. Poses was, but he overlooks some important points and misrepresents others.

To begin with, sound quality. I don’t claim to have a comprehensive familiarity with modern pop music, but I hear very little prerecorded, and almost no live, sound comparable to the Dead’s.

Second, performance. He may not like Branford’s contribution to “Eyes of the World,” but he should know that Branford Marsalis had never played with or listened to the Dead before performing that song with them. Considering “Walking Blues,” how should a modern band perform that song? Try to copy Robert Johnson’s performance? The Dead do make it sound like the Dead, but what would you expect of any group?

Third, historical perspective. Keith Godchaux’s death occurred after he was “fired,” and there is little doubt that the Dead’s music improved significantly almost immediately thereafter (compared to the year or so prior to his departure). True, many aspects of the Dead’s concerts and song selection aren’t as adventurous as they were 15 or 20 years ago, and that is unfortunate. On the other hand, much the same can be said of any composer or musician.

In closing, I can’t say that I’m particularly fond of Without a Net, but I would probably rank it in the top 6 or 7 Dead albums available.

Rob Bertrando
Reno, NV

Ensemble’s Tiger
Editor:
Hi guys! How come you took so long to review this little jewel? Know what? I own a pair of these jewels, which I bought about a year ago after auditioning for half an hour before purchase. At that time the B-50 was an unknown product (no information, no review, nothing whatsoever), but after listening to it, I knew this was the amplifier I was looking for. Oh yes, I agree with every word of GL’s review of the B-50 (Vol.14 No.5, p.135), in particular the conveyance of the emotional aspect of music so truthfully and the portrayal of the true tonal qualities of the human voice and musical instruments. Just listen to the Judds’ Heartland album (RCA 5916-1-R) with the B-50 and you will get Wynonna and Naomi in your listening room singing their hearts out for you. Believe me, I have heard this little amp run circles around massive kilobucks pre- and power amps (which I shall not name for their own protection). And the looks of the B-50—I think it belongs in the Museum of Modern Art.

Permit me to suggest three ways to improve the B-50’s sound. One, connect the phono leads to the CD inputs of the amp instead of the AUX inputs. I think the CD inputs offer the shortest signal route. From my own listening tests, the CD route gives slightly better transparency and speed. Two, GL’s Ensemble PA2 phono stage taps power from the B-50. Solution: Get the Ensemble PA2 outboard power supply. You will immediately hear better headroom, dynamic range, and contrasts, and less congestion in the music.

Three (I keep the best for last): If you want a super “Tiger” with super-excellent sound, buy another B-50 together with another PA2 and its power supply. Split the L–R phono signals and bi-amp your loudspeakers with the two PA2s and B-50s. Then sit down in your listening chair, play your favorite records, and be ready to be transported to audio nirvana. Everything about the sound quality that GL so perfectly described in his review will increase by an unbelievable 40%!

Lastly, the holy grail of music-reproducing components is within sight. I speak from actual listening experience: Get a Basis Debut gold turntable with a Graham arm. Use a cartridge of Micro Benz MC-3 class. Use a pair of B-50s and accessories as mentioned above, Ensemble interconnects and speaker cables, Tice Audio Power Blocks and Titans, and finally a pair of Ensemble Primadonna loudspeakers. The whole system will be so neutral and musical that only the cartridge and your own listening room will determine your final preference of what sound you desire. Then you will stop looking around for so-called better components and listen more to the music for a long, long time.

K. M. Ng
Malaysia

See the reviews
Editor:
Would it be possible to beat on Dick Olsher until he is persuaded to list all his associated components (including interconnects) in his reviews?

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STEREOPHILE, P.O. Box 364, Mount Morris, IL 61054-9965
US: John Atkinson

Peter Mitchell reported last month that agreement had been reached between the record industry and hardware manufacturers that a levy should be imposed on digital recorders and media (blank tapes and discs). In exchange for the compliance of the hardware industry who fear that DCC and MD will be stillborn without the support of the software producers, Peter explained, "the music industry will stop fighting digital media and will forget about debit cards, royalties on analog recorders, and VCRs with digital sound." It was announced on July 11 that, indeed, all parties (with one exception) spoke with one voice on the matter and were to ask Congress "to exact legislation to clarify the legality of private consumer audio taping."

The parties involved are the Electronic Industries Association (EIA), the Recording Industry Association of America (RIAA), and the Copyright Coalition of songwriters and music publishers represented by the National Music Publishers Association (NMPA). This coalition includes the AFL-CIO (Dept. of Professional Employees), the American Federation of Musicians (AFM), the American Federation of Television and Radio Artists (AFTRA), the American Society of Composers, Authors and Publishers (ASCAP), Broadcast Music, Inc. (BMI), National Academy of Recording Arts & Sciences (NARAS), National Association of Retail Dealers of America (NARDA), National Academy of Songwriters (NAS), National Consumers League (NCL), National Music Publishers Association (NMPA), National Songwriters Association International (NSAI), and the Songwriters Guild of America (SOA).

The key aspects of the proposed legislation are:

- a clarification of the law to permit consumers to copy music for "private, noncommercial use, whether in digital or analog format";
- the mandatory inclusion of the Serial Copy Management System (SCMS) in "all nonprofessional consumer digital audio recorders";
- a scheme whereby manufacturers and importers of digital audio recording equipment and media will make a royalty payment based on the manufacturer price of the recording equipment (2%, up to $8 maximum) and blank media (3%) into a special fund. "This fund," the release continues, "will be administered by the US Copyright Office and the Copyright Tribunal and distributed to music creators and copyright owners on the basis of record sales and, in some case, airplay."
- The release draws attention to the fact that analog recorders and media are specifically not mentioned, as aren't equipment and media used for video recording or computer use, professional digital recorders and media, dictation machines, and telephone answering machines.

"This proposed legislation will settle the debate of the legality of consumer audio taping," said EIA VP Gary Shapiro. "The royalty... will benefit consumers assuring them full access to new product and an ever-increasing, diverse supply of prerecorded music." And in what those of a cynical bent might feel to be a quid pro quo, the NMPA and Sony note that "an agreement has been reached and approved by the court to dismiss (without prejudice) the digital audio tape (DAT) lawsuit against Sony." ("Without prejudice" means that either side can resurrect the suit if they so wish at a later date.)

I'm sure Jack Hannold and Peter Mitchell will comment further on this proposed law next month, but there are four points I feel should be made:

First, there is no "debate" over the legality over home taping. There not being a law specifically prohibiting it, it is legal!

Second, it is not a royalty that is proposed, but a tax. And perhaps uniquely in American history, it is a tax to be imposed on the public at large for the benefit of a special interest group. An analogy would be if a special pur-
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chase tax on new cars were to be collected in order to benefit the oil industry. I regard this tax as a disturbing precedent.

Third, the group not represented in the impressive listing above are the ordinary members of the American public who actually supply the wealth the American record industry enjoys so much—$7.54 billion income in 1990! Sure, the National Consumers League is in there, but it might well be thought that they have forgotten the second word in their title, being for something that will hit those whom they represent in their wallets. Since when do ordinary people “benefit” from a direct tax, Mr. Shapiro?

Fourth, the incorporation of SCMS into any digital recorder is sufficient prevention against extensive domestic digital copying, in my opinion, so why have a tax as well? The RIAA has all along shouted loudly about home taping being their major problem when in fact commercial piracy—in the analog domain!—cuts most significantly into their profits. However, they apparently can’t do anything about piracy, particularly in the Far East where copyright laws are weak; the hardware manufacturers, who need the new technology to ensure their survival through the ’90s (see Martin Colloms’s report elsewhere in this issue’s “Update”) are a weak target; and the American public, who will compensate the record industry for the profits lost through piracy, don’t have a strong—don’t have any lobby in Washington. Hence the proposed tax.

I urge Stereophile readers to write the “no-new-taxes” President, their Congressmen, Senators, their religious leaders even, telling them what they think of the idea of contributing even more money to a group of people many of whom already seem to have more money than God. Or do you all want DCC and MD that much?

US: John Atkinson

I was saddened to receive a letter from Edward Dell, the publisher of The Audio Amateur, Speaker Builder, and other audio magazines, informing me of the death in March in Oregon of Norman H. Crowhurst, who became ill after being knocked from his bicycle by a car. Mr. Crowhurst, who was born in England in 1913, moved to the US in 1953; he and his wife became naturalized citizens in 1960. Chief Engineer for Tannoy from 1935 to ’45, Mr. Crowhurst also worked for Fairchild Recording Equipment for two years and was a prolific writer on audio, having contributed over 2000 articles and papers to more than 32 publications and journals, as well as writing some 50 books. According to Mr. Dell, he had “an unusually clear writing style and an exceptional ability to explain difficult theoretical concepts in terms beginners could understand,” a talent only matched in my experience by Stereophile’s J. Gordon Holt and Hi-Fi News & Record Review’s John Crabbe. Many of his readers credited Crowhurst with being the first author to stimulate their appreciation for audio and electronics.

My own experience of his work was limited, but an essay by Mr. Crowhurst published in db in June 1981 did have a Damascene effect on me. I was working for HFN/RR at that time and despite having had a formal scientific education and early career, was becoming increasingly dissatisfied with the conflict between the magazine’s “scientific” posture and the realities of what I perceived every time I listened to my system. (You could say that I was on the cusp between being a reluctant “objectivist” and adopting the experiential view of reality to which I still adhere.) I republished that essay, “Pitch, Dynamic Range, and the Grasshopper” in the June 1982 issue of HFN/RR, not the least for its insightful illustration of the manner in which careful application of scientific method can still give the wrong answer. Mr. Crowhurst had concluded his essay by describing a (hypothetical? apocryphal?) experiment on the biology of the grasshopper, the conclusion of which has an obvious relationship with many of the “scientific” experiments performed in the field of audio:

“First the experimenter placed the grasshopper by the pencil and said ‘Jump.’ The grasshopper jumped. After the experimenter had retrieved the grasshopper from the other end of the lab, he ripped off one of its long hind legs and placed it by the pencil. This time, he had to shout ‘Jump’ somewhat louder before the grasshopper would jump, and it did not jump so far. He retrieved the grasshopper again, ripped off the other hind leg, and placed it in position again. But this time, no matter how loudly he shouted, and however close he got...
to the grasshopper, the grasshopper did not jump. So he took up his pencil to write his conclusions in the lab notebook.

"The experiment proves that a grasshopper's hearing is in some way connected to his long hind legs. Removing one of them makes a grasshopper somewhat deaf. Removing both of them makes him completely stone deaf." Mr. Crowhurst was an associate member of the British IEE, a senior member of the British Sound Recording Association, a member and Fellow (1959) of the AES, a member of SMPTE, ASE, the National Council of Teachers of Mathematics, and the Professional Engineers of Oregon. He is survived by a daughter—and by his writings.

**US: Arnis Balgalvis**

Great news on the vinyl front! I just spoke to Marcia Martin of Reference Recordings, who informed me of some very exciting developments. It turns out that Reference has acquired a half-speed mastering lathe and plans to reissue their entire catalog in that format. At the present time they are practically finished fine-tuning their new acquisition and are ready to produce product. Having had the pleasure of being awed by some of Keith Johnson's master tapes in the Spectral suite at the recent summer CES—it didn't hurt that Keith was using his own tape machine along with Spectral's new power amplifier driving WATT/Puppies—and knowing how good Reference's work on vinyl has been up to this point, this development comes at the right time to rejuvenate vinyl ventures.

But that's not all. Marcia also told me that Reference Recordings is in the final stages of negotiations for the rights to some treasured master tapes that have been responsible for more than a few renowned LPs. No, Marcia was not at liberty to divulge any particulars, but from the way she sounded she appeared to be bursting with anticipation. She did promise, however, that by early 1992 we will be able to hear for ourselves what Reference Recordings now has in the works.

**US: John Atkinson**

When Mark Levinson the man (as opposed to Mark Levinson the electronics brand, designed and manufactured by Madrigal Audio Laboratories) wanted to design a loudspeaker for his Cello company, his inspiration was Acoustic Research's classic LST design with its multiple drive-units. Indeed, AR made drive-units for the resultant Cello Amati loudspeaker, which combined four 1.5" dome midranges and four 3/4" dome tweeters with a 12" woofer. It was announced in June that Mark Levinson and Cello are involved in designing a new range of loudspeakers for AR, tentatively called the Acoustic Research "Cello Design Series," or some such. The Canton, Massachusetts–based AR, which was sold by the Teledyne Corporation to International Jensen in December '89, seemed to have been languishing for the last few years regarding its product philosophy, uncertain whether to try to emulate the success of Boston Acoustics or Polk in the mass market, or to continue the tradition of East Coast quality exemplified by the LST, or to do both. (The company's product line in the mid-'80s, for example, featured "TSW" models intended to do the former and "Connoisseur" models to do the latter.) According to Mr. Levinson, Jensen (who also bought the NHT company just over a year ago, the designer for which, Ken Kantor, is an Acoustic Research alumnus) intends the new Cello-related products to spearhead the resurgence of Acoustic Research as a quality-oriented speaker line and to move their image upmarket.

**Canada: Robert Harley**

At the June Consumer Electronics Show in Chicago, Museatex of Canada announced and demonstrated two "major developments in digital audio technology." The first is called "Logic Induced Modulation" (LIM), a newly discovered phenomenon in digital playback (accompanied by a technique for measuring it). The second is "C-Lock," a circuit that reportedly reduces LIM distortion and clock jitter in digital processors and CD transports.1

Logic Induced Modulation is a phenomenon in which the digital code being processed by integrated circuits modulates the processor's power-supply rail and ground reference. This in turn modulates incoming and generated clock signals, causing timing variations (jitter)

1 For discussions of clock jitter, see "Industry Update" in Vol.12 No.9 (IVC's R2 Interface), "Industry Update" in Vol.13 No.11, and J.A's excellent Vol.13 No.12 article on computer simulation of jitter's effects on a digital converter's analog output.
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STEREOPHILE, VOL. 14 NO. 5 – MAY 1991

Robert Harley — Wonderfully musical and visually stunning.

Robert Deutsch — Provides the listener with sound of exceptional realism.

Peter W. Mitchell — Attractively musical sound with bass extending solidly into the 35Hz neighborhood.

BOUND FOR SOUND, NO. 1A – 1991

Martin G. DeWolf — Best sound at show? Probably. A tight precise soundstage coupled to a sense of crystalline clarity. What purity!

ULTRA HIGH FIDELITY, NO. 30 – 1991

Gerard Rejskind — Some of the very best sound at the show.
in those clocks. Clock jitter is a major source of degradation in digital audio.

Museatex’s chief engineer Ed Meitner, along with Robert Gendron, an integrated circuit designer at Analog Devices, discovered that this power-supply modulation in turn modulates the logic-transition thresholds within the chips. These changing logic thresholds cause the clocks’ rising and falling edges to continuously shift in time—the very definition of jitter.  

Moreover, the frequency of the clock jitter introduced by this phenomenon is directly correlated with the frequency of the audio signal being processed by the chip. The digital code representing a 1kHz sinewave would thus modulate the DC supply rail with a frequency of 1kHz, creating a 1kHz clock-jitter component. According to Museatex, the analog audio signal appears on the digital chip’s power-supply rail about 60dB down, and can be seen by AC-coupling the rail to a high-gain amplifier, low-pass filtering the signal to remove ultrasonic frequencies, and looking at the output.  

Clock jitter with a specific frequency is far more sonically detrimental than jitter with a random frequency distribution. Jitter of a specific frequency produces discrete sidebands around the decoded signal’s frequency, the frequencies of which are the sum and difference product of the primary signal’s frequency and the jitter frequency. A 10kHz sinewave decoded by a DAC whose clock signal was overlaid with jitter having a frequency of 1kHz will thus produce spurious signals at the analog output of 9kHz and 11kHz. Jitter with random frequency distribution raises the noise floor.

It’s easy to see how specific frequency jitter—especially when correlated with the audio signal—is far more pernicious than random frequency jitter; the spurious artifacts bear no harmonic relationship to the wanted signal, adding harshness and that steely edge so often heard from digital, especially on violins, instruments rich in high-frequency harmonics.  

Museatex developed a measurement system called the “LIM Measurement Module” for examining LIM and analyzing the frequency content of clock jitter. The LIM Measurement Module demodulates the digital source signal, low-pass—filters that signal, and displays the demodulated jitter components on a spectrum analyzer. A typical plot of jitter distribution is shown in fig.1. This technique reportedly reveals more information about jitter than an absolute time specification. Digital converter manufacturers are beginning to quote the amount of clock jitter in digital processors, usually in the tens or low hundreds of picoseconds. Looking at the jitter’s frequency distribution seems to be a step forward in understanding the causes and effects of jitter.

Indeed, Museatex used the LIM Measurement Module to analyze other sources of non-random jitter in CD playback. They found that the two main sources of non-random jitter are the transport’s mechanical drive control and the mechanical resonance of the disc itself. Another source of jitter is the digital processor’s receiver circuit which generates a new clock based on the incoming S/PDIF signal. The receiver chip’s PLL reportedly introduces a specific jitter signature to the recovered clock. In addition, the LIM Measurement Module revealed differences in the jitter frequency distribution between coaxial and fiber-optic interconnects between transport and processor.

Taking the next logical step after identifying and measuring these phenomena, Museatex developed several circuits to reduce these non-random jitter components. This family of circuits, called “C-Lock,” re-synchronizes the sig-

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2 Ed Meitner will present a paper called "Time Distortions Within Digital Audio Equipment Due to Integrated Circuit Logic Induced Modulation Products" at the October AES Convention in New York. The paper was co-written by Robert Gendron of Analog Devices.

3 To get an idea of how much activity (transistor switching) goes on in a standard chip found in digital processors, consider the Philips SAA7310. It buffers and decodes the incoming S/PDIF signal, generates a new clock with a PLL, strips out and processes subcode information, performs EFM (Eight to Fourteen Modulation) decoding and CIRC error-correction decoding (both of these are huge tasks), and generates and outputs servo signals. The final output is an EIA-formatted datastream ready for the digital filter. The chip has a single +5V supply.

4 I strongly recommend reading JA’s article on this phenomenon and his computer simulations of jitter’s effect on the analog audio signal in Vol.13 No.12. The graphs are particularly illustrative.
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Fig. 2 Jitter frequency analysis of a typical CD transport.

Fig. 3 Jitter frequency analysis of a typical CD transport after adding C-Lock circuit. Remaining frequency components are due to jitter added after the C-Lock circuit in the receiver's PLL circuit and to subcode modulation.

nal with its original clock rate. Different C-Lock circuits have been developed for different points in the digital playback system. One operates on the S/PDIF output of a transport, another in the outboard digital processor.

Fig. 2 is a jitter frequency analysis of a typical CD transport, made with the LIM Measurement Module. The many spikes are specific-frequency jitter components created by LIM in the transport's ICs, and the mechanical resonance and eccentricity of the disc itself. Fig. 3 shows the jitter frequency distribution of the same transport, but with the addition of the C-Lock circuit. The circuit appears to reduce the number and amplitude of these specific-frequency jitter components.

The C-Lock circuit is incorporated in recent production of Museatex's CD Drive, and is available as a retrofit to older Museatex CD Drives. The C-Lock circuit for D/A converters will be available later this year in Museatex's Bit-stream D/A converter and Digital Control Center, and as a retrofit for existing units. Museatex also intends to license the patented C-Lock circuit to other manufacturers and will make the LIM Measurement Module available to C-Lock licensees.

According to Museatex, the audible benefits of these circuits are increased focus and clarity, with less harshness and glare. Indeed, Ed Meitner feels that C-Lock will significantly narrow the gap between analog and digital playback. Watch for a full listening-room evaluation of this development.

I'd like to end this technical narrative with a philosophical commentary:

Audio "objectivists" deny the audibility of a certain effect strictly on the basis of that effect's conformance with established theory. They seek to prove that the phenomenon is false by what is called "destructive analysis," described by Michael Polanyi in his book Personal Knowledge (The University of Chicago Press, 1958). This technique attempts to destroy the credibility of a reported phenomenon by attacking its compatibility with known scientific principles.

The audible effects of disc dampers, different transports, and digital interconnect cables come to mind. All of these have been the subjects of destructive analysis because the real causes of their effects were unknown, and because manufacturers have ascribed false reasons for their effectiveness (damper discs reducing the error rate, for example).

As science and technology march forward—as they apparently have with the discovery of LIM, the measurement technique, and the greater understanding of jitter in digital audio—more and more of these phenomena that have been subject to destructive analysis will be proved to have demonstrable causes. I am confident that science and technology, the very things of which audio subjectivists are supposedly ignorant and fearful, will eventually—one small step at a time—prove the subjectivist position.

Polanyi expresses the need for such discoveries and the pitfalls of destructive analysis in this eloquent passage:

"...whenever truth and error are amalgamated into a coherent system of conceptions, the destructive analysis of the system can lead to correct conclusions only when supplemented by new discoveries. But there exists no rule for
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making fresh discoveries or inventing truer conceptions, and hence there can be no rule either, for avoiding the uncertainty of destructive analysis.”

US: John Atkinson

“This system is capable of enhancing the sound of all pianos. It can make a small upright sound like a grand piano and expand the sound of a concert grand to new dimensions. We have noted consistent improvements like increased dynamic range, faster response, remarkable tonal clarity in the top octave of the instrument and greater richness and depth of tone at the low end of the keyboard,” wrote Les Barcus, president of California company Barcus-Berry, of their new “planar wave” acoustic piano pickup. I just thought those of you who continue to have doubts about the quality of live piano sound should know that hi-tech help is at hand. (Though we shall probably stick with an unenhanced Steinway “D” for the next Stereophile recording project.)

US: Peter W. Mitchell

June’s “Update” included a report that, for best sound, CD players might need a few seconds in Pause mode to stabilize after jumping to a new track. I suggested that this might be especially noticeable in Philips-type mechanisms because the laser and detector are mounted at the end of a swinging arm. A reply from David Birch-Jones of Marantz USA (whose products use Philips technology but are distributed here by B&O) suggests that the opposite may be true. In Japanese mechanisms the laser and detector are mounted on a “sled” that is gear-driven along a straight track, which provides coarse positioning while fine centering of the lens on the track is performed by a lateral servo. The latter may, as I described, go into a furious burst of activity when you access the beginning of a track. But Philips mechanisms do not have a lateral lens-positioning servo; the lens is centered on the track solely by the magnetically controlled swinging arm. There is no audio output until the arm is centered on the track.

This may be one reason why Philips mechanisms don’t have the blazingly fast track access of some Sony and Toshiba CD players, which use their lens-positioning servos to lock onto the track before the sled has settled at its new location. The price of this speed is that you may be hearing audio while the servo is working furiously to center the lens. Indeed, depending on the design of the sled mechanism, the lens-positioning servo may be forever working to correct for the coarse tracking of the sled.

So in this type of player the engineers must be especially careful to isolate servo currents from the audio circuits (including their power supplies and ground paths).

The bottom line is that the relative merits of the two approaches to track-centering will have to be settled by actual listening, not by analysis and speculation.

Silicon Valley: John Atkinson

Once you’ve been to a few Consumer Electronics Shows, you develop immunity to being told that the wave of the future is the all-in-one home entertainment system. I look at the beautifully designed and installed “media” rooms in the pages of Audio/Video Interiors, for example, note that sound quality was nowhere on the mind of anyone involved in the installation—I remember one system placing Apogee Duettas inside wall closets so as not to offend the aesthetic taste of the interior designer—and return to my listening room, put an LP on the Linn, and transport myself into another world.

At this June’s CES, however, I witnessed the launch of a media system that could well qualify for high-end status. The reason? The Frox system, demonstrated in private showings in the SwissHotel, consists of heavily DSP-based technology for the integrated reproduction of audio and video, coupled with an open digital architecture that allows its purchaser the freedom to use real high-end ancillaries. You want an “intelligent” audio/video multi-room setup that will allow you to keep your reference Krell/Apogee digital playback system? The Frox allows you to do that. You want to keep your old 1984-vintage CD player for use in the exercise room but control it from the main media room? The Frox system allows you to do that. You’ve been put off high-end video by the limited resolution of the NTSC color TV system? From my experience at the launch, watching excerpts from Dark Man and the letterboxed
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**Lawrence of Arabia**, the Frox system pushes video quality significantly closer to the cinema experience. (Its virtual video resolution was said to be around 550 lines—and I believe it!)

A new Sunnyvale, CA–based company that has so far raised more than $17m of venture capital and has put 3½ years of research into the project, Frox has taken the talents of engineers who have hitherto been working in the aerospace and computer industries and told them to develop a sensible integrated audio/video system. The system is based around three processor units, the Froxvision Video Control Center, the Froxsystm Digital Audio/Video Processor, and the Froxsystm Analog-Digital-Analog Processor.

The last unit digitizes line-level or phono analog signals—it has its own phono preamp—with a 20+4-bit floating-point ADC to enable the media processor to be used with existing high-end analog source components. (It also has a dedicated electrostatic headphone amplifier.) The first unit, a video preprocessor, takes cable, satellite, and broadcast TV signals, and the video outputs from LD players, VCRs, and S-VHS VCRs, and digitizes them. The analog audio signals are also digitized with a 16-bit, 64x-oversampling ADC. The digital data output of this box feeds the second unit, which is the media-processor-heart of the system. Featuring no less than nine ASIC chips, it is said to possess the processing power of three Sun workstations! Video processing includes de-interlacing with apparently effective control of every one of the 300,000 screen pixels in each field, while digital audio processing includes full tone control, graphic equalization, surround sound, ambience creation, and preamplifier functions. The video outputs are fed to Frox TV monitors or projection units (these are not trivial components, being equivalent to 31MHz–bandwidth, RGB input, VGA color computer monitors), while the unit's fiber-optic digital audio outputs can feed conventional D/A processors, digital-input speakers such as the Meridian D600 and D6000 (the former were used in the demonstration), or digital-input speakers to be introduced by Frox.

The media processor also organizes what I felt to be one of the most impressive parts of the Frox system. With such versatility, you might expect the system's remote control to be one of those two-layer, hundreds-of-identical-buttons monsters. In fact, it's a simple wand with just five buttons: Power On/Off, Volume Up/Down, Mute, Channel, and Master Control. And the final button is the one that really controls everything. For the Froxsystm uses a picture-in-picture video graphical interface for all its functions that Macintosh users will find immediately familiar. The ability to "click on an icon" is the only skill the system's owner needs to acquire.

The final aspect of the Frox system was one that I found most impressive, given the informational overload aspects of modern life. Once hooked up, if the owner so desires (and pays for a subscription), the system downloads information on CDs and TV programming on a continual, user-transparent basis to update the hard-disk database that can be supplied with the system. (The carrier for the information is the vertical-blanking interval in the broadcast WTBS signal, much as in the Teletext systems that are well-established in Europe.) You buy a CD, insert it into the Frox 100-disc CD changer, and there on the video screen appears the booklet illustration and the liner notes. Click away with the wand on the displayed track information and you program the changer. TV programming is similar: The user interface gives you immediate access to on-screen TV Guide data which you can then organize, search, and sort with the wand, just as in any database, to program your VCR, to lock out a film category so your kids can't access it, or simply to see when and which Cary Grant films will be showing in the next four weeks. Oh, and sports scores and statistics, updated every 15 minutes, will also be instantly available in an on-screen window.

The press were not given prices, but I understand that a basic system will cost between $10,000 and $14,000, with delivery to dealers scheduled to start at the end of this year.

Yes, this jaded audio journalist/couch potato was impressed. In addition to its high-tech aspects, the Frox system preserves freedom of choice for its owner, something I feel should be applauded.

**US: Peter W. Mitchell**

As in previous years, other writers walked the miles of aisles in order to report on all of the new high-end products at the Chicago CES. (See the August Stereophile for what they found.) My focus is more selective: I try to highlight interesting developments in technology, novel
The Stealth was so named to convey its design sophistication and ability to surreptitiously deliver formidable performance. Never before has such an array of technology and function been united in a digital product.

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As is often true at CES, many of the most impressive applications of new technology were in video, most spectacularly a big-screen, 1125-line, wide-screen, high-definition television system based on a color-LCD projector made by Sharp, the world's leading producer of LCDs for TV and computer displays. It was far and away the best-looking HDTV picture I've ever seen, with brilliant whites, velvety blacks, and a rich color spectrum that, except for flesh tones, was more impressive than any picture I've ever seen in a glass tube. The system isn't for sale, since HDTV broadcasts are still a few years away. If it were, the price probably would exceed $100,000 because of the difficulty of making flawless LCDs containing millions of picture elements each driven by a separate transistor.

At a more affordable level, Sharp's display included several flat-screen 6" color-LCD sets, hung on the wall in museum-style frames. But enough of video; further information can be found in J. Gordon Holt's Video Theatre magazine.5

In many ways the most impressive audio product in Chicago was the Apogee Grand, a $60,000 system standing nearly 7' tall, with large ribbon panels mounted atop subwoofer enclosures. (In a typical house the top of the speaker will miss the ceiling by a couple of inches if you don't put it on a very thick rug.) The system weight, according to the spec sheet, is just 280 lbs. short of a ton! (No, you can't ship it via UPS. But at that price I guess they can afford to hire a moving van to transport it from the factory to your house.) A 200W amp in the bass cabinet drives the dual 12" subwoofers while your amplifiers drive the ribbon panels. The included electronic crossover is remote-controllable and can be set for bi-, tri-, or quad-amping with crossovers at 70Hz, 250Hz, and 9kHz.

One aspect of its sound was wholly remarkable: the Grand produced the most impressive soundstage I've heard from two-speaker stereo. Images were precisely located in space and were absolutely stable, while layering in depth was, by a large margin, the most dramatic I've ever heard. In an orchestral recording I could have drawn a map locating every instrument on the stage. In Track 19 of the Stereophile Test CD the nearfield separation of the front and rear ranks of organ pipes was astonishing. (That separation, while correct from the microphone's perspective, is exaggerated in the recording compared to what listeners in the hall normally hear. But most loudspeakers collapse depth to some degree, yielding a plausibly lifelike impression. As heard through the Grand, the depth is even more exaggerated than I intended it to be when Brad Meyer and I made the recording.)

Timbrally the Apogee Grand was good but unremarkable. Its low end is said to extend below 18Hz, but the entire bass range below 100Hz seemed weak. Perhaps that can be blamed on the unusually large room (about 20' by 40') and the placement of the speakers about 10' out from the wall behind them. In a room of typical domestic size the speakers would necessarily be closer to walls, which would tend to strengthen the bass while sacrificing a bit of image depth.

Brad Meyer brought to CES a DAT copy of many of the recordings that he and I have made, individually or jointly, and we had a lengthy session with the $15,000 B&W 800 speakers. By coincidence the June issue of Stereophile appeared during the show, featuring Lew Lipnick's enthusiastic review of the 800. In a large (about 25' by 40') room, the 800 sounded a lot better than in the cramped display at last winter's CES, but it still left me cold. Standing up, the sound was mediocre. Sitting down, it was better but still somewhat colored, with blurred imaging. Finally, when I scrunched down so that my chin was on the seat-back in front of me, the sound snapped into clear focus. The highs, which had previously seemed detached, became a proper part of each instrument's sound. Imaging was wonderfully precise, and inner detail was resolved with a degree of clarity that I have previously experienced only with the tri-amplified ATC SCM50A monitors. I still have one reservation about the sound: it tended to exaggerate the "digital glare" of many CDs. The obvious reply would be that the 800 is reproducing the problems of CDs with ruthless clarity. On the other hand, the Snell B sounded equally transparent and detailed, with both master tapes and CDs, but didn't annoy me with glare.

When I read the June issue after the show, it

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5 Video Theatre: 1215 Ravenwood Road, Boulder, CO 80303. Tel: (303) 499-4557.
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was clear from JA's measurements why listening at the correct height is so crucial with the 800: on and above the tweeter axis there is a severe crossover suckout and a top-octave rise. For approximately flat response, and for the tweeter to be in-phase with the midrange, you have to listen below the tweeter axis. The speaker seems to have been designed for listeners relaxing on a low couch. (The glare that bothered me may be associated with the top-octave emphasis or with the 4kHz resonance seen in JA's waterfall plot.) The people running the B&W exhibit seemed unaware of the speaker's sensitivity to listening height; many listeners were standing, while others sat upright in their chairs, none hearing the speaker at its best.6 The speakers should have been tilted back slightly or placed on a raised platform to aim their best listening axis at listeners' heads, not their ribcages.

When a prototype of the Snell B was shown at CES a couple of years ago, it was a refrigerator-size box that produced clean high-level bass to below 16Hz. A near-final version shown last January was less imposing in bulk and less dramatic in sound, with a 20Hz bass limit. The production version, shown in Chicago, is easy to summarize: I know of no more accurate, transparent, or musically satisfying dynamic speaker at any price. I'm tempted to omit "dynamic" from that sentence; a few panel speakers are slightly more lifelike in the midrange but can't match the B's dynamic range or bass. So at $4500/pair the B is a clear best-buy compared with most of the $10,000+ competition. After hearing it with Kevin Voecks's demonstration material I returned the next day for a lengthy audition with familiar CDs and Meyer's DAT of our recordings. The speaker is remarkable for its octave-to-octave balance, authentic timbre, spacious soundstaging, well-resolved detail, broad listening window, and freedom from both coloration and exaggeration. As for the height axis, it should be heard sitting rather than standing but is not as narrowly directive as many speakers. It's a wonderfully neutral reference speaker for judging recordings by. (In many respects it outclasses the Snell Type A, which probably will have to be retired until Voecks can figure out how to make an even better speaker.) Pardon my enthusiasm; if I hadn't just purchased a pair of ATC SCM50As I would be strongly tempted to buy the Snell B.7 Maybe I will anyway.

Forty years after Saul Marantz launched the original Marantz One, the name has been reborn as an important high-end brand for products built under the Philips umbrella but distributed here by B&O. The Marantz room included a DCC deck and other goodies (including a CD recorder for $10,000), but the focus of most attention was the Marantz Audio Computer, a $15,000 digital signal-processing system programmed to do a variety of useful tricks. The list includes three-band parametric EQ, dynamic range compression or expansion, scratch removal, concert hall ambience re-creation, Dolby surround decoding, delayed echoes, reverb, processing to move images out of the head with headphones, and automatic system equalization to compensate for room acoustics and speaker aberrations. Some of these tricks have been available in other processors, but this package does them all—actually, any two of them at once, since it contains two independent DSP circuit stages.

The unit was demonstrated by placing a microphone where a listener would be, measuring each speaker at that location, noting that the response was both non-flat and different for the two channels, and automatically re-equalizing each speaker to deliver flat response from both speakers to that chair. If the differences were mainly room effects I'm not convinced this is something you really want to do; but placing the mike closer to the speakers to match their direct, more nearly anechoic output might yield a very beneficial improvement in imaging. (See this month's "The Ground Floor" column.) No doubt most people will wait a few years for the price of this technology to drop, but several speaker designers told me they will buy one as soon as Marantz makes it available; the MAC could be a remarkably useful experimental tool.

One floor up was a new company from Fort Worth, Texas, named Audile (the beginning and end of "audiophile"), focusing on perhaps the most useful application of DSP. The ACT 1 minispeakers ($6000) are triangular in shape with a 6.5" coaxial speaker in one end and a line-level module that uses digital signal processing to equalize both the amplitude (frequen-

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6 I despair of CES visitors who expect to be able to make valid value judgments on loudspeakers while standing. As I try to show with the measurements that accompany speaker reviews in Stereophile, listening axis is critical with almost every model we test.

7 As Peter writes, we have just received a review pair of these Snells in Santa Fe. Watch for a review in the Fall.

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Stereophile, September 1991
MAJOR PERFORMANCE. MINOR DECISION.

FROM THE LEADERS IN RIBBON LOUDSPEAKER TECHNOLOGY COME THREE NEW HYBRID PERFORMERS. CENTAUR MINOR, CENTAUR AND CENTAUR MAJOR EXPAND THE CUTTING EDGE OF AUDIO.
response and the phase response of each speaker. Next year there will be a companion subwoofer for about $4000, so a full-range system will cost $10,000. The DSP module contains plug-in EPROM cards that are factory-coded with the correction data required by the individual speaker. Consequently, not only does every system off the production line match the design prototype, but the two speakers in a pair will match either other precisely, which is critically important for producing a well-resolved stereo soundstage.

This is an exciting prospect since anything done in digital chips tends to become rapidly cheaper as time goes by. Perhaps eventually all brands of loudspeakers could offer consistently great imaging with little cost and no effort—in contrast to the fine-tuning now required in production to match speakers carefully to each other or to a prototype.

The Audile speakers come with dedicated stands that place their optimum axis 36° above the floor. But, as with B&W, that axis was at chest level for people sitting in the supplied chairs; the stands should have been tilted or raised to put the axis at ear level. When I kneeled on the floor to get my ears at the correct height, the speakers did indeed produce a soundstage as nicely focused as anything I heard at the show except the Apogee Grand.

The company also undercut its credibility by claiming that the speakers are flat to within 0.05dB in response and 0.5° in phase. Even if that were true, how could they know? Measuring microphones are not calibrated that accurately. The most charitable explanation is that somebody slipped a decimal point. In any case, the speakers didn't sound flat; timbres were on the hard and glaring side, and a quick measurement with the Ivie spectrum analyzer revealed an octave-wide 3dB bump at 6kHz. Still, the design is promising; I look forward to hearing it again at the next show.

The main focus in the Swan's Speakers room was the $5900 Cygnus, a floor-standing system whose lovely oak cabinet is a rounded trapezoid, wide at the back and narrow at the front—just wide enough to accommodate the dual midrange drivers straddling the tweeter in an arrangement seen a decade ago in designs from Meridian (Boothroyd-Stuart) and known in the US as the d'Appolito configuration. The tweeter dome begins as aluminum foil and is transformed into a very thin, light ceramic. A 12" woofer is concealed within the cabinet, radiating through a rear port. Heard at a relatively close distance in a smallish room, the sound was clear, detailed, and smooth, with a slight emphasis around 1kHz that was remarkably revealing in pop recordings but a bit too forward in classical music.

The most puzzling room at the show contained Enaos Acoustic systems from France. Each speaker consisted of a vertical column that looked—and, when tapped, sounded—like an undamped steel pipe, plus a football-shaped pod on a bracket halfway up the column. Apparently these structures are part of the sound-radiating system, intended to achieve a quasi-omnidirectional output. The sound was pleasant and a bit diffuse. The speakers were being demonstrated with an 18W tube amp, which appeared to be clipping badly during the Verdi Requiem. When I suggested that they needed at least 200W to play that piece, the exhibitor seemed horrified; this speaker could fill the Louvre with just a few watts. He was willing only to step up to a 30W tube amp, which was slightly less distorted in loud passages.

UK: Ken Kessler

Outside of Europe, Great Britain is regarded as a former world power reduced to Third-World status. Within Europe, it's regarded merely as a pain in the ass. And in the UK itself? Hard to tell, when the populace veers from those who remember the Empire to those who refuse to accept that glasnost and perestroika have made hard-line communism somewhat passé. Undeniable, though, is the wealth of talent in the UK, despite the country's apparent inability to exploit it.

Not so the Japanese, who have employed British talents on more than one occasion—especially in hi-fi. The latest, though, is something more than Brand X looking to a British designer for the fine-tuning of a budget amplifier, or to modify a Japanese-made speaker for UK tastes. This newest liaison involves the launch of an entire brand completely new to hi-fi, but it's a name which all of you know for other activities. And it could have a serious effect on the mass market.
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Canon—world leader in computer printers, photographic equipment, photocopiers, fax machines, and a host of other high-tech products—has decided to enter the world of audio. The leap from a laser printer to a loudspeaker isn’t as big as you’d think, though, because Canon has been involved in sound-related design for some time, namely with the microphones on the company’s video cameras and audio/video products in general. The company described the hi-fi connection with the term “inadvertently.” However tenuous the link—even though handycams have just as much a claim to membership in the world of A/V as moving-coil cartridges—Canon has opened its wallet for a pure audio project.

I don’t know the precise dialogue, but I imagine a scenario in which some executive responsible for finding new areas to exploit made the above connection. With the kind of wealth possessed by a company like Canon, I would also imagine that the amount of cash available for pure research is akin to the gross national product of a good-sized European country. And beavering away in one of the company’s well-appointed laboratories was a designer with a novel idea for a loudspeaker. And since loudspeakers are an integral part of A/V systems... 

The ideas man was one Hirokazu Negishi, head of Canon Research Europe and based in the UK, who came up with a successful version of the myriad reflector designs that crop up from time to time. While “omnidirectional” is something of a dirty word—designs claiming this property never seem to work—Negishi avoided the association by focusing on one primary goal: the removal of the “hot seat.” His concept is called Wide Imaging Stereo™ and it avoids the “stereo nowhere” effects of earlier omnis, which splattered sound like buckshot.

What came next was the formation of Canon Audio Ltd., based in Woking, Surrey. And to make the product a commercial reality, British guns were hired. Numbered among the staff are an MD with over a decade’s experience at Harman Audio (UK), and a Design Engineer with stints at Mordaunt-Short and QED. Use was made of the Institute of Sound and Vibration Research at Southampton University. And no less a stylist than Allen Boothroyd—the artist behind every single gorgeous Meridian product, the SL-series Celestions, and other audio beauties—was hired to create the look.

The first hi-fi product to wear Canon’s badge, the S-50 loudspeaker, is novel inside and out. Negishi’s design employs a single full-range driver firing down onto a cone to disperse the sound. But unlike previous attempts, which fired at the point of the cone, spraying sound a full 360°, the S-50’s driver is positioned in front of the cone’s raised center-point, and the back is filled in with a support pillar, which holds what I guess you’d call the enclosure.

This “cabinet” is a dome made of ABS plastics, like Darth Vader’s helmet without the visor. The gloss-black cone beneath it, at which the driver is aimed, and the integral pillar, are cast from Mazak alloy and finished to a high standard. To make the S-50 user-friendly, it has been designed to work on a shelf, close to a TV monitor without risk to the tube, on the floor, on wall shelves, or—best of all—on optional, dedicated floor stands which bring them up to optimum height.

Every detail has been carefully addressed, right down to the fitting of spikes to the stands, easy access to the speaker terminals on the underside of the speakers even when they’re bolted in place on the stands, the provision for running cables through the stand pillars, safety protection to save the speakers from head-bangers, and the creation of an owner’s manual which manages to cover every tweak topic without alienating “normal” consumers. Which means that Canon intends to appease the hi-fi loonies while producing hardware for the real world—a neat bit of tightrope walking during a first attempt at hi-fi.

And Boothroyd’s created a real gem for fashion victims, a tiny little jewel which looks like a room freshener/ionizer or a table lamp from a yuppie gift shop. It only measures 250mm in diameter by 310mm tall—not much higher than an LP sleeve. The all-black or all-white finishes will cause, at worst, only minor palpitations in the heart of your interior design consultant, and the aforementioned freedom of choice regarding positioning means that the S-50 can be all but hidden.

While I’d rather leave the quality assessment to this magazine’s reviewers when the product is launched in the US, I will tell you that Canon’s design team did banish the hot seat. The S-50’s dispersion characteristics are such that you can stand right next to one of the speakers and hear it and the other with apparently equal intensity. Walk around them, sit way off-axis—it
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doesn't seem to matter. This speaker is going
to win a lot of support among those who like
to have friends over to watch videos: no more
fighting for decent seats as far as the sound is
concerned.

The S-50 is intended as a world product. It
speaks volumes for Canon's faith in British tal-
ent, because the S-50 will be manufactured in
the UK, too; the native employees weren't
hired just to design and market the S-50. And
despite the usual shock-horror price tags of UK-
made products bearing imported badges, the
S-50 is almost dirt-cheap: £350 ($630)/pair.

So what companies will this affect? Will
Canon make a big deal about the Anglo in-
volve ment in markets outside the UK?

The obvious competition would seem to be
any speakers marketed for their suitability in
A/V systems, wall-mount speakers or other
types said to blend in with the decor, and speak-
ers like Bose 301s which boast a wide spread
of sound. The pure hi-fi designs would appear,
then, to be spared the challenge presented by
a slick product with a respected, familiar name
on the front. But the hi-fi press and therefore
the audiophile audience will not be ignored;
indeed, I and two other reviewers in the UK
have already written our reports, and all in-
dications are that Canon is going to take any crit-
cism very seriously. And knowing the British
employees, I don't think Canon wants to take
the expected, wholly commercial approach
which would probably make sales so much
easier. This odd little number is being reviewed
for sound quality as well as novelty value, just
as if it had been fashioned from wood and wore
two drivers on a rectangular, flat baffle.

What will follow the S-50 isn't certain, but
I was told to expect a slightly larger, floor-standing—only model with the same technology but
a bigger driver. A subwoofer would seem a
likely offering, especially as the "home thea-
ter" suitability of this design warrants a central-
channel bass system for use with Dolby sur-
round setups.

More intriguing, in light of Canon's involve-
ment with the computer industry, are the pos-
sibilities regarding digital technology. CD-ROM
ain't a million miles away from CD-I, and any-
thing with "CD" in the title will play CD audio
discs. And computers and digital signal proces-
sors have more in common with each other
than camera lenses and loudspeakers, so I
wouldn't bet against surround-sound hard-

ware, laser disc players, Hi-Fi VCRs, or anything
else which might strike Canon's fancy. And if
the British employees—all veterans of the hi-fi
wars—have anything to say about the future of
Canon Audio Ltd., I doubt it will be allowed to
ignore amplifiers, DCC, DAT, and whatever else
is required to make (eventually) an entire sys-

tem wearing the Canon badge.

This is going to be a project worth watching,
especially if you're Japaranoid. If Canon suc-
cceeds in audio, how long before the pages of
Stereophile magazine contain articles featur-
ing Nikon, Pentax, Honda, Sapporo, Nissan,
Kawasaki, Fuji, Konica . . . ?

UK/The Netherlands:
Martin Colloms

At a Spring press conference in London,
Philips's Gerry Wirtz unveiled a further ele-
ment in their Digital Compact Cassette (DCC)
strategy, turning the spotlight on to the world
market's appetite for music, music technology,
and innovation.

Philips presented powerful market-research
data to support their arguments; such was its
value and potential for controversy that we
were not allowed copies of the presentation
graphs despite having been shown them on
screen. With my pen scribbling as fast as pos-
sible, the following items were caught and sub-
sequently confirmed.

Philips makes the important point that the
various market sectors in audio coexist but
largely enjoy independence when it comes to
a particular consumer spending his or her
money. While a new recording may well be
released in many formats, therefore, each for-
mat has its own market sector. The second
point concerns product lifetimes. History has
shown that virtually no product lasts indefi-
nitely on the market. Certainly some designs
and some ideas live longer than others, but
eventually maturity sets in, to be followed by
the inevitable decline. The introduction of a
new technology may not necessarily cause the
decline of another related product. The LP is

8 See also "Industry Update" in Vol.14 Nos.4, 5, 6, & 8, April,
May, June, and August 1991, for a reasonably complete discus-
sion of DCC.

Stereophile, September 1991

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DISCOVER A LONG-LOST TREASURE IN TRUE FIDELITY

Though audio technology continues to advance, much of what is being produced nowadays is rushed in quantity to the marketplace without sufficient consideration for quality. AIR-TIGHT tube amplifiers, on the other hand, feature only those breakthroughs that serve the necessary purpose of superior sound reproduction.

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a fascinating example of this phenomenon. The growing interest in high-fidelity audio in the 1950s meant that the introduction of the long-playing record was well overdue. It was greeted with enthusiasm for its worthwhile playing time, stereo capability, greater fidelity compared with the 78 (some still debate this), and much-reduced noise levels. Both hardware and software grew at a steady rate, maintained over a remarkably long period. For example, by 1968 LP sales in what is euphemistically called the “developed world” had reached some 440 million, while the cassette was just beginning to make its presence felt. As cassette sales began their powerful climb, you might have thought that the LP would begin to suffer. Not so: The LP continued its own growth, finally reaching its peak a decade later, having risen to over a billion units per annum.

By 1982–83 the LP was showing clear signs of falling out of favor, sales declining to 700 million. The crucial point is that this was before CD had been introduced. CD did not kill off the LP; it was already in decline, although it would be hard to deny that the full penetration of the new digital medium did hasten its eventual demise. LP sales in 1990–91 are estimated to be 250 million, with perhaps 130 million of these sales being in one country, namely Brazil, whose closed economy has barred CD sales. Compare this total with that for CD, which is currently running at 700 million. A broader perspective can be gained by noting that the entire software market is estimated to be 2 billion units. Clearly the analog cassette dominates the scene and will continue to do so.

The introduction of CD did not appear to hurt the cassette at all; it has continued to grow well over the last seven or eight years of CD. Product and technology lifetimes are major issues—the LP was powerful for some 25 years. Cassette has enjoyed a good 15 years and has just peaked at 1 billion units; there are now signs that the 1991 results will show a drop to 950 million. Philips’ point is that, from now on, the way leads downhill for the cassette, which has finally matured in market terms.

These cycles, which may seem to be remarkably long cycles to an outsider, are the result of the software or music component of the business. Once the main hardware selling stage is over, prerecorded sales take over for a much longer period, and the whole becomes largely self-sustaining.

What are the predictions for CD? The estimate is for software sales to grow to 950 million by 1992–93 and then level off. Present trends suggest that, by 1993, LP sales will be negligible, with correspondingly weak distribution. Philips and the record companies have their eyes on the total software market and the unwelcome news that that is beginning to slow down. As Wirtz put it, “We are already too late with the introduction of a new music medium, and we must make rapid progress as an industry if the historic hardware and software markets are to be maintained at the full potential.”

This is where DCC comes in. Announced in the year when, for the first time, US teenagers are said to have spent more on their sneakers than their music, the race is on to reach broad industry acceptance for the new medium and to encourage an ultra-rapid growth to stave off any decline in the recorded music market.

How quickly would Philips like DCC to grow? At first sight the targets suggested look impossible. The requirement is that DCC hardware and software sales grow five times as fast as that experienced with CD, even though the latter performance is rated as a major commercial success story, as indeed it is. Philips maintains that the answer lies in the sheer size of the cassette market. 180 million cassette hardware units will be sold in 1991, of which 45 million are Walkman types and a large number are car stereo. Though it took a number of years for CD to reach the present level of 25 million players sold, DCC is set to reach 100 million in a similar period. It is reckoned that all DCC needs to do is to join the cassette bandwagon. Or, as Wirtz put it, “the cassette marketing

9 See “Industry Update” in June, Vol.14 No.6, for the 1990 US sales figures for the three media and the manner in which they have changed over the last decade.

—JA

Stereophile, September 1991
In airline pilots, brain surgeons, and CD players, steadiness is a pretty fundamental requirement. In the case of our newest CD player, the Elite® PD-75, its rock-solid stability has rocked the world of music lovers and audio critics. As the reviews have rolled in and the awards have been bestowed, it is apparent that the standard for CD players has been advanced dramatically. Behind this success lies a principle that Elite has brilliantly exploited: The mechanical elements of a CD player are just as critical to its quality as its electronic components.

The first significant innovation to come out of this insight is at the heart of the PD-75. The stable platter.

Two basics of physics—mass and inertia—combine to make the stable platter an obviously superior platform to support a disc spinning at high velocity.

Next, the stable platter, by supporting the entire area of the CD disc, minimizes wobble and chatter.

A wobbling disc presents a difficult target for the laser, while a chattering disc creates resonance, distorting the signal, which distorts the sound.

Another problem for CDs is gravity. Spinning above the laser pickup and supported only in the center, the disc sags microscopically. Which to a laser beam is significant degradation.

But on the Elite CD platter, the disc is turned upside down—that is, label down, information side up. The disc lies firmly clamped to a solid surface.

Meanwhile, the laser pickup reads the disc's digital code from above, where it is immune to dust settling on the laser optics.

We invite you to bring your favorite CD to an Elite dealer and demonstrate the advantages for yourself. Give that disc an audience on the PD-75 for what one critic called "a dimension of sound that you have never heard before."

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structure represents a giant wheel slowly turning, of great momentum and beginning to slow almost imperceptibly. What we wish DCC to do is to take hold on this wheel and hitch a ride." Thus DCC will be rapidly accelerated up to the speed of the wheel and, as it gains its own popularity, it can begin to add momentum of its own. As Wirtz cogently explained, DCC need only take a small share of the replacement market for cassette hardware to achieve the target. Cassette hardware sales number 100 million for replacement only. Just 5% of this for the launch year amounts to 5 million DCC players and/or recorders.

Some interesting details also emerged. For example, the DCC deck used for the April demonstration was a fair prototype in that the provision of PASC digital processor had advanced to the integrated chip stage. This is important not only in terms of progress made with the technology, but also in terms of the commitment and confidence shown in the medium. The deck shown could play both digital and analog cassettes, with A/B comparisons made using a Mahler symphony of wide dynamic range, much to the disadvantage of the analog version. Using a replay chain including a Philips amplifier, a Bitstream CD player, and a competent pair of three-way Philips speakers, comparisons were also offered with CD. Under these conditions, there was little doubt that the two digital formats sounded quite similar. Based on recent tests, Philips engineers are of the opinion that while the DCC signal coding might be detectable under the most favorable conditions, the relatively small degree of imprecision should be related to the finding that differences between similarly priced CD players are rather greater. For example, in the Philips range the difference between two models at $300—one Bitstream and one multibit—is much easier to tell. In another example, differences in the execution of analog output stages or filters are more significant sonically.

Philips indicated that the first representative models of their own player would be unveiled in a few months: *i.e.*, in the Fall. This mid-priced launch model (approximately £330, or $600) would have two tape compartments, one for analog record/play and one for DCC. Different manufacturers are expected to come up with different hardware solutions. Wirtz noted that quite good analog results could be obtained using the same multitrack digital thin-film head for analog replay. It is expected that top-quality mixed media recorders will have two sets of heads.

Wirtz made another strong point for DCC by showing a group of cassette mechanisms ranging from a high-end model to a low-cost radio portable, the latter obviously non-hi-fi and suffering from an acknowledged audible level of wow and flutter. Despite precision engineering, even the top model was not immune to this defect, due to variations and imperfections in the cassette structure itself. Taking the low-grade budget mechanism in his hand, he pointed out that with the addition of a digital head and the supporting electronics, this flimsy object would be lifted to a CD fidelity standard. This is a powerful argument for DCC compared with R-DAT, which requires a high-precision video recorder-type assembly.

Prices for DCC players are expected to fall rapidly as the market grows. DCC cassette manufacturing costs are only a little higher than for compact cassette, the difference mainly due to the metal spring-loaded slide cover. Moreover, DCC duplication can be done at the usual 64x rate.

Tape lifetime is expected to exceed that of cassette for several reasons. First, the automatic cover will reduce contamination as it successfully does in 3½" floppy discs. Second, the housing is defined to better tolerances, allowing more precise tape handling. Finally, the materials used are specified for higher reliability under adverse conditions.

**Listening tests**

The Philips presentations provided little data on DCC sound quality other than it was quite similar to CD and rather better than cassette (Dolby-C, HX, etc.). At present, no official coding equipment is available for independent trial, but some insight into the sound of the coding can be gained from a test disc made by Bayerischer Rundfunk (Bavarian Radio BRTD003). Loaned to me by Meridian's Bob Stuart, this CD carries one composition by the late Raphael Kubelik: *Peripherie für Orgel und Orchester*. The disc carries this 20-minute work in its entirety, in both the usual linear 16-bit PCM and in the Musicam format compressed and coded to 256k bits and then decoded. In addition, three excerpts are given in A/B, A/B format, comparing 16-bit vs compressed code/decode at 256, 192, and the final highly compressed rate of
128kb/s. This latter rate is significant: it’s the basis for the proposed standard for digital FM stereo for terrestrial broadcasting. Its quality relationship to the existing Zenith/GE multiplexed stereo format is important, particularly as it has the potential to eliminate birdy and multi-path-type distortions from the audio output as well as providing an improvement in intrinsic dynamic range to beyond 100dB. Present FM stereo is not satisfactorily quiet on wide-range classical material due to a typical weighted S/N ratio of 65-70dB. A great welcome is likely from the industry for such a low-noise, high-quality broadcast system.

Further tracks on the test CD comprise the raw errors resulting from the coding, which are otherwise assumed to be aurally concealed by the masking phenomenon when the music is simultaneously present. These error sections are presented at a normal level—i.e., as if the relevant music was present—and are surprisingly large. On a broad-band noise and distortion basis, these run to several percent, especially at the highest compression rate. (The error signals also include considerable low-bit quantization distortion.) My immediate reaction to these grossly distorted extracts in context was just how well the masking theory is borne out in practice.

In a similar way to the PASC system, Musicam divides the frequency range into 32 equally spaced bands, each 750Hz wide, at a 48kHz sampling rate. Advanced systems such as PASC employ adaptive coding which adds to the main computed function for tonality, spectral distribution, and effective masking thresholds. In adaptive mode, a check is continuously made for the degree of coding error. With this information, spare bits of information capacity can be reallocated to maximize the system resolution. This partly explains why a complex music signal may carry several percent of optimally masked distribution error, hidden below the aural thresholds, while a single tone has all the available bit capacity applied to it. The result is that Philips can still claim low distortion for the system, judged by normal laboratory procedures. For example, THD+Noise at full level is quoted at better than 92dB, comparable with CD standards, while the overall S/N ratio can exceed 110dB. Only complex noise or multiband distortion tests are likely to begin to catch it out on the test bench.

A high-quality system was used for the listening: a Meridian 602/606 combination feeding bi-amped Krell KSA-80Bs, these in turn driving a pair of Apogee Duetta Signatures. At 256kb/s with the single program choice, the differences when assessed by this method were judged to be very small—only just detectable, and at a level which would probably defy discrimination by an ABX or similar double-blind method.

The listening panelists noted that Musicam slightly altered the sound, but not in ways commonly experienced; they could not directly relate the changes to familiar differences observed between CD players or amplifiers. It was also felt that some practice was required to help quantify the subtle changes introduced by the coding. For the record, 256kb/s Musicam was felt to add marginal brightness in the upper treble, a slightly coarser texture to the overall sound slightly suggestive of a touch of high-frequency flutter on a tape mechanism, a minor loss of air and ambience associated with specific instruments, a shade of ambiguity in the stereo focus, and a slight dilution of the individual character of musical instruments themselves, this last described as a "grayer, blander" representation. In visual terms, imagine a first-rate high-resolution print produced by a direct steel engraving process, then compare it with a first-rate electrostatic photocopy.

As might be expected, the 192k code was fairly similar to the 256k, but larger differences were audible with 128kb/s. Compared with linear CD coding, this represents a massive 11:1 ratio of data compression. Certainly no one expects this to be a wholly inaudible, transparent process when assessed under critical listening conditions.

The panel was much more confident here, and noted an increase in graininess, as well as a breakup of the fine texture of the low-level reverberant soundfield. Some mild gating and compression of ambience was evident, with a further loss in stereo focus. Some data were now being lost in the code/decode path, and the sharp edge at the beginning of percussive transients was rounded off, a sort of mild dynamic treble compression akin to strongly driven cassette tape. A further loss in instrumental character was detected.

This is the standard proposed for terrestrial FM for Europe for the mid-1990s. Accordingly, a good mid-priced tuner and a broadcast-standard RF stereo encoder/transmitter were set up.
Comparisons of the 128kb/s simulated tuner output with the uncoded linear feed sent via the FM transmit/receive path were revealing. With this limited program choice, and noting that multipath and birdy or whistle-type interference was not simulated, the 128k digital coding was felt to be superior to conventional FM stereo. The benefits of a stable wide-frequency response and ample dynamic range made themselves felt, while the losses imposed by existing FM multiplex encode and decode circuitry were at least as damaging to audible fidelity, if not more so.

After continued listening, and further A/B, A/B trials using different musical excerpts, my more usual single presentation test procedure—how I would normally assess a CD player—was adopted. Here the first few minutes of the work were played a few times in the normal 16-bit format to allow a thorough familiarization. Then a similar length of the 256kb/s-coded format was assessed. Under these conditions, the differences sounded greater; it was felt that the overall quality difference approached the level which might distinguish two good CD players.

The overall sound of 256k appeared to be more "processed," with hints of the kind of audible signature of the dbx linear compression system and of Dolby-B or -C, these not quite at their best, performing with a middle-grade cassette. Some soloists were spotted more than they should have been, while some of the flow and pace of the musical work was lost. Before any reader takes fright and decides my results are those of a lunatic or begins to despair of this class of digital technology, a relevant context would be helpful!

Consider two good recordings of classical music, one made in a fine hall with A/D encoder X. Now compare with a second recording made in a different and less "focused" hall, with A/D encoder Y. Both may be good records, worth playing and keeping. 256k coding quality differences are comparable to the difference between these two recordings. To put it another way: If 256k has been used on one recording and not the other, I believe that it would be almost impossible to identify by aural signature where the 256k coding was used. Its effects would be largely submerged in the overall sound of the recording chain. Differences between professional ADC units are often greater than this.

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Commentary

- The software business needs a new, fashionable medium to maintain its present success; DCC is a prime contender.
- The "big wheel" argument for the cassette market is credible and could well provide DCC with the basis for an extraordinary growth phase.
- DCC does not have to sound exactly like CD. It merely has to offer readily perceived, high-quality sound to succeed. CD is a companion, not a rival. (Sony's MD, of course, is a rival.)
- DCC is conceived as part of the renewal cycle of analog cassette. As such it must be cost-effective. The established cassette medium has been one of the greatest consumer success stories of all time, second only to the lightbulb in popularity and availability.
- The indications are that full 398kb/s PASC coding for DCC will provide a high-quality transmission system.
- Likewise, the prospects for digital stereo radio are also very hopeful at the higher compression rate.
- The present, near-invisible losses in DCC/PASC encoding are susceptible to further adjustment and improvement thanks to the open-ended, intelligent architecture of the coding.
- Nonetheless, the guiding principle of compression-type encoding is the accurate modeling of the aural response and the adoption of the coding model to it. Storing music according to the present understanding of that model may be unwise. My view is that PASC and similar systems should not be used for archival purposes. Storing all the data heard by the microphone may be thought wasteful, but it allows for selective use later. Make that selection prematurely, and the lost bits can never be recovered. Other considerations arise for mastering and/or professional distribution, such as the consequences of cascading compression-based systems and the possible accumulation of errors. Recordable CD using a traditional linear PCM format may well prove to be the best choice for archiving.
- Major companies are signing up for DCC hardware and software applications. Philips aims to deliver DCC decks to the market in Spring 1992. From here, the prospects look highly favorable. I could not envisage widespread acceptance and use for R-DAT, but for DCC, I believe it will be "all systems go."
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— Sam Tellig, STEREOPHILE, January 1991, Vol. 14, No. 1

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It's the difference between a stuffed dog and the real thing," said Gunter (George) Bischoff, of Melos Audio, on the difference between solid-state gear and tubes. "The real dog may piss on the rug, needs visits to the vet, gets fleas, has to be walked, but it's a living thing—a real dog. The stuffed dog requires no care, needs no maintenance, but has no life."

"But I own a cat, George. Low maintenance."

"You still own a live cat, not a stuffed cat. The cat needs to be fed, has to get rabies shots. There is still some maintenance."

I gotta be a glutton for punishment.

A year or so ago, I received a pair of VTL 225 monos on loan from Audio Advisor, Inc.—David Manley's 225Wpc monoblock tube amps, the ones so hailed by Bob Harley.

All was well for a month or so—but this was summertime. Whew—those sixteen EL34 output tubes (eight output tubes per amp) gave off a lot of heat. I had the amps atop a record cabinet in front of some windows. You could see great gobs of heat rise from the amps.

The sound? Splendid on my Spendor SI00s. Maybe slightly rolled-off on top—with ample, if not particularly tight bass. The amps had a lot of power, but what I missed was bass solidity. Still, I enjoyed these amps—until the fateful moment when Götterdämmerung took place.

I looked up from my listening chair and one of the EL34s began to glow a deep orange, as if the tube were aflame! Simultaneously, I heard distortion. I leaped up to turn off the amp, but too late. The tube went from orange to white before I could hit the off switch.

Whew—at least the amp didn't catch fire or damage my speakers. I returned both loaner amps to Audio Advisor and turned my attention to solid-state—the B&K M-200 monos and the Adcom GFA 565 monoblocks I've already written about. (Audio Advisor says all they did was replace a couple EL34s and the amp was fine. Still, I shudder to think of what might have happened if I'd gone out for the newspapers while the amps were warming up.)

What is it about the sound of tubes?

Whenever I have solid-state gear, I keep longing for the sound of tubes. I'm reminded of what a certain manufacturer of solid-state preamps once said—that he couldn't design a solid-state amp that sounded like tubes. He'd tried. Tubes and transistors would always sound different, he feared—despairing, perhaps, of his own ability to clone the sound of tubes.

Funny, ain't it, how solid-state manufacturers are always trying to clone the sound of tubes. "It's his most tubelike amp yet," is a comment you sometimes hear from audiophiles whenever a new solid-state amp by a top designer hits the market. But then a couple of years passes and this designer's next amp is the most tubelike ever.

We talk about how amps with MOSFET output devices sound more "tubelike" than amps with bipolar output transistors. But tubelike isn't the same as tube. Tube gear tends to produce timbres which sound different from solid-state gear. Tube gear tends to sound more "musical." For those of us who grew up with the sound of tubes—in table radios, early TV sets, and ordinary phonographs—there is a rightness about the sound of tubes. I remember our family's old Westinghouse floorstanding console radio—wonderful rich sound, although I'm sure the highs were scarce. ("The radio has a nice tone," said my mom. And she was right.)

So, hankering for that old-time sound, I periodically get sick of solid-state and give tubes another try. For instance, I tried a couple of Quicksilver amps with the Spendor SI00s—both the "standard" Quicksilver monos with the 8417 output tubes, and the KT88 version, with the KT88s. Nice sound—truthful timbres, holographic soundstage and all that—but not enough dynamic force in the bass (I was going to say "balls," but . . .). Neither pair of Quicksilver amps exploded. This has always been a good quality about Quickies—excellent reliability.

Howie Hyperfy is big on Jadis.

He had the JA-80s, then the JA-200s—neither of which, unfortunately, could coax what he (or I) felt was convincing bass from his Avalon Eclipses.

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out," said Wolf Man, with his wolfish smile.

At Victor Goldstein's suggestion—the Jadis importer—Howie tried a Defy 7. (Howie is in the hi-fi business, so this was easy. Actually, Howie is a consultant to Jadis. And a good one, too.)

So Howie got the Defy 7, which I would agree does have more bass impact (I was going to say "balls" again, but I caught myself), and he STILL wasn't happy. In desperation, he called in Lars!!!!

"How was the sound, Lars?" I asked my Swedish buddy.

"Good detail and transparency. But the bass I'm afraid was lacking."

Heh-heh.

I haven't been to the Howie home lately, but I did phone Hyperfy to find out how the Defy 7s were getting along.

"Oh, great, great, great," enthused Hyperfy.

"Tons of bass. Bass all over the place. You wouldn't believe the bass."

He was starting to sound a little like Victor.

"Lars didn't think so."

"Lars was a big help with speaker positioning. But I've done other things since his visit—Tube Traps in the corners, an absorbent panel on the back wall. Took care of the problem—that and the Defy 7s. Tons of bass," Howie refrained.

It sounded to me like he was trying to talk himself into hearing more bass.

Meanwhile, thanks to Victor Goldstein, I got a Jadis Defy 7. I still had the Spendor S100 speakers when the amp arrived—it took two people to carry it into my listening room. Big, big chassis. I didn't have to wait for good sound. Perhaps the amp had already had a few hours' use—it sounded as if it were already broken in.

I liked the amp, right off. Specifically, this $5495 stereo amp—which runs class-A/B, by the way—sounds French. If you've heard a good French symphony orchestra, you'll know what I mean. The sound tends to be lean, crisp, clean—not at all fat or beefy, like, say, a German orchestra, or chocolate, like the Vienna Philharmonic. I'm not saying there's anything wrong with the Vienna Philharmonic—I wouldn't want to hear a bunch of Frenchmen play Bruckner, for instance. But French orchestras have a distinctive sound, and the Jadis Defy 7 reminds me of it.

Bass, I thought, was very, very good for a tube amp—on my Spendor S100s, which can sound flabby with the wrong amp, especially the wrong tube amp. By this, I mean the bass was solid—less ample than it was with the VTL 225s, but tighter, better damped. As the week went by, the sound of the amp overall was very much to my liking—lean, clean, but also sweet, smooth. All this plus bass with a tight tushy. (Ooops! Sorry, ladies.)

Then it happened—exactly eight days after I first got the amp. It was a Sunday and the amp had been playing for at least 12 hours. I heard something which sounded like tube farting—coughing—in the right channel. "Damn," I said to myself, "I got a tube problem." Then I thought the problem stopped.

A few minutes later, the noise started again—only worse. And then—a pop, distortion (not necessarily in that order), and bluish-gray smoke. Fortunately, I was able to leap from my listening chair and turn it off. No damage to my speaker.

Victor Goldstein, the Jadis importer, was mortified.

It was a tiny capacitor which failed, he told me later. It happened only on my amp. No other Defy 7 had failed and no other would fail for the same reason because the failure was Victor's fault.

Well, not really.

Here's the story. Jadis made some changes on the Defy 7—using caps to bypass the fuses for the GE 6550 output tubes. Jadis sent this particular Defy 7 to Victor without the caps installed, so Victor could hear the amp without the bypass caps. Before he gave me the amp, Victor decided to have bypass caps installed—but a miscommunication with the factory meant that the wrong value caps were put in. When a tube was stressed—as it was after playing all day—the cap failed.

Stereophile, September 1991
Victor says this can't happen again because this was the only Defy 7 on which wrong-value caps were installed; all Defy 7s now come from the factory with the correct caps.

"What will the readers think of me? My reputation?" Victor asked. "They will think I am an idiot. I am roooined . . . r-r-r-rooined."

"No, you're not, Victor. People will think you're a human being. These things happen. And Murphy's Law always says that if there's going to be a failure, it will be a review sample that fails."

Sonomically, I think the Jadis Defy 7 is excellent—some of the best bass I've ever heard from tubes. And physically the amp is beautiful. But it's a big beast, with three transformers all at the front of one chassis. It's a devil of a beast to move. To lift it, you have to hold it under the front of the amp where the transformers are and get your sense of balance—all the weight is in the front. If you try to pick it up at the center, the amp will get away from you. Apparently that's happened at least once.

Lew Lipnick apparently tried a Defy 7 and found it wasn't up to driving his B&W 800s. Not surprising—those humongous speakers probably require the muscle of Krell. But I have not heard a tube amp that's better in the bass than the Jadis Defy 7. Hyperfy was right. The class-A JA-80s and JA-200s may have greater delicacy and detail—some je ne sais quoi that I feel only a class-A amp can have. I understand that Arnie Balgalvis now has two pairs of Defy 7s to drive his Apogee Divas, so I'm sure we'll be hearing more from Arnie. And Hyperfy, too—I'll keep you posted. (Do you think Hyperfy's trying to keep me from visiting?)

DO and others have said that a tube amp's sound quality is largely dependent on the transformers. Who am I to argue? The Jadis transformers are said to be hand-wound in Bordeaux wine country—a time-consuming process which involves several days' labor for each amp (you can see why the Defy 7 can't be cheap).

The first Defy 7s didn't get quite the same rave reception. I remember an early Defy 7 at Definitive Hi-Fi—I thought it was good, but not excellent. That was before the bypass caps. Apparently, the fuses were fouling up the sound of the amp. Victor says that installing the caps opens up the sound—more detail, more delicacy, more air there. And, having heard an early Defy 7, I agree. The Defy 7 certainly does uphold the Jadis reputation for superb sound—sacrificing some ultimate delicacy and detail but giving tight, taut bass that, to my ears, more than makes up for it. I think that the stereo, single-block construction is the amp's biggest drawback—but then, how else are you going to get 100 Wpc of Jadis sound for $5500? Surprisingly for a Jadis—incroyable!—this amp is cost-effective.

It may also be a better investment than your typical $5000 or $6000 transistor amp. No, I don't recommend that you buy hi-fi gear as an investment—unless it's an old Marantz tube amp or something, a very sought-after vintage collectible. But I don't think your Defy 7 will be obsoleted next year or the year after by a replacement model which sounds more tube-like. It can't sound more tube-like; it already is tube! True, you have the not-inconsiderable expense of tube replacement—this stereo amp uses twelve 6550 output tubes, but the bias on each is set relatively low (approximately 28 milliamps), so you may get two, even three to five years on a set of output tubes.

Meanwhile, I divested myself of the Spendor S100 speakers. Actually, I sent them along to Stereophile in Santa Fe so someone else could have a listen. You know me—I'd had the speakers for over a year and needed a change. Also, I'm planning to sell my house and move into smaller quarters—one reason why my reviewing activity may be curtailed in the coming months. I experimented with several loaner speakers before purchasing a pair of Celestion SL700s and a pair of Epos ES11s. My intention is to keep both, for separate systems. Now don't you go selling your Spendors—they are fine speakers!

Meanwhile, I arranged with Mike Sanders, of Quicksilver, for a pair of the new 90Wpc KT88 chrome monoblocks—the so-called "Silver Monos." There would be a delay, however. How to fill the gap? Well, the Adcoms were still on hand . . . and I was able to arrange a month-long audition of the Valve Amplification Company's PA90 amps—the 90Wpc mono configuration that retails for $4890/pair. These are the kinds of amps you can lust over.

As configured, the VACs put out 90Wpc in "ultralinear" mode and about 45Wpc in triode.

1 Jadis does not have a history of replacing its models with newer models. What I call the "churning" of models can drive the customers of some companies crazy and adversely affect resale values.
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The Spendors were already gone by the time the VACs arrived, so I listened mainly with the Scientific Fidelity Teslas, about which I may have more to say in future.

I wondered, as you might, whether the VAC amplifiers might sound as good as they look. Man, these amps are gorgeous—richly painted in black, almost like a lacquer box, with brass accents. At the Wolf Man's—David Wolf's Audio Images store in New Canaan, Connecticut, which closed at the end of June, alas—the VACs and the Teslas produced some of the most palpable sound I've ever heard. Such a soundstage!

Could the amps create a similar magic in my own listening room?

Yes. DO has another pair of these amps, and for longer audition, so he'll be writing them up at greater length, but I must say I was mightily impressed—especially with the amps in triode mode. They had a realism which was positively breathtaking. Talk about detail, delicacy, smoothness, and utter transparency. The Sci-Fi Tesla speakers are no slouches, either, when it comes to soundstaging.

If I hesitate about the VAC amps, it's in just one area—dynamic impact. In the triode mode especially, the amps seem to lack the last ounce of oomph. Switching to the "ultralinear" mode gave me more vigorous dynamics—at the expense of some smoothness, delicacy, and detail. Changing the East German EL34 output tubes for the new Golden Dragon EL34s improved the sound somewhat, affording greater dynamics and maybe a tad more transparency overall. I wonder what became of the old East German tube factory—a casualty of capitalism? I hope not; we need all the tube-production facilities left in the world. (Ah, East Germany. I remember the East Berlin airport—guard dogs would eat you alive if you so much as stepped out of queue. We must keep Communism alive or we in the "free world" will run out of tubes.)

You can see why it's possible to go crazy when reviewing tube amps. Change the tubes and you change the sound. I wonder what might happen, for instance, when the new Golden Dragon KT77 output tubes become available—these might be better still and give the amps the dynamics I found slightly lacking.

Still, my overall impression of the VAC amps is very positive. These are amps of very great transparency. They have an utter see-thought (hear-through?) quality, especially in the triode mode. They have an uncanny ability to locate soloists and their instruments in acoustical space—this is the "palpable presence" that I keep raving about whenever I encounter it.

How about the VACs compared to the Jadis Defy 7? Sorry, folks, I didn't have them close together enough in time to give you a definitive answer. And I changed speakers—as well as marital status—in the meantime (perhaps in that order of importance). But I'll take a tentative stab at comparing the two amps.

They are very close in overall sound quality, and not all that far apart in price. I think the Jadis amps may win out in terms of detail, while the VAC amps, in triode mode, may win out in terms of holographic realism. Close call, though. The Defy 7 definitely wins out in terms of bass impact. It would have been fun to keep the VAC amps, but the manufacturer needed them back, and who was I to argue since Stereophile already had another pair chez Dick Olsher? Besides, I had the Quickies on order.

On to the new KT88 monos. Fortunately, I still had the Sci Fi speakers on loan, along with my newly arrived Epos ESL1s and Celestion 700s—the so-called "special edition."

It's such a sensuous experience to unpack these amps—so beautifully packed and wrapped in tissue paper. Like the VAC amps—which
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Lewis Lipnick
Stereophile Vol. 13 No. 7, July 1990

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Hi-Fi Review [Jan. 91]

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High Fidelity [March 91]

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High Fidelity [April 91]

DSP50S/DPA50S Pre/Power Amplifiers. "delivers a sea of fine detail and a depth of insight way beyond the usual. It sets up a soundstage with highly focused images of instruments and vocalists, all superbly separated from each other. (Deltec) offers a level of sound quality quite beyond anything I have encountered to date."

Hi-Fi Review [Nov. 90]
come with chamois sleeves!—the Quicksilver amps are obviously labors of love.

I wish I still had the Spendors to try with the new Quickies, because the Spendors had been, surprisingly, such ball-busters in the bass. Nevertheless, with the Sci Fi Teslas and the Epos and Celestion speakers, too, it became apparent that these new Quickies are different creatures from the older models.

All the good Quicksilver qualities are here: the smoothness, the detail, the holographic quality. But there's more. The power supply is beefier, and the transformers are different. These amps pack punch! I mean, man, they kick butt. (Oops—there I go again! If it's not balls, it's butts.) They have full, deep, interesting bass—and they're relatively tight and taut. I don't mean that they have tight, taut killer bass like Krell—but the bass is still excellent.

I experimented with KT88s. Kevin Hayes, of Valve Amplification, also imports the Golden Dragon Chinese tubes under the Tubes by Design marque. I purchased two matched pairs of Golden Dragon KT88s, which, to my surprise, sounded quite different from the Chinese KT88s supplied by Quicksilver, just as, say, moo shoo pork might vary from one restaurant's recipe to another's.

The Golden Dragon KT88s gave the amps even tighter, tauter bass—better integrated with the rest of the sound. Transparency improved, too—delicacy, detail, palpable presence. Sorry to keep using the same words over again, but this is what tubes are all about. When was the last time you heard someone describe a transistor amp as delicate?

To keep the Quickies? I could have sent them on to Stereophile, but I'm keeping these amps. The VAC amps may have even more in the way of transparency, but they're also more costly. Ditto the Defy 7. As the Quickies and the Celestion 700s broke in, the sound just kept getting better and better. Timbres were just right—smooth, sweet, musical.

But then—of course—disaster.

Well, not really. Less than a week into use, one of the Golden Dragon KT88 output tubes failed—I think the tube lost its vacuum. I noticed when the output from the right channel amp seemed lower than the output from the left. It was.

Kevin Hayes replaced the matched pair of KT88s—no problem. But Kevin did suggest that the Quicksilver amp might have been at fault. No other Golden Dragon KT88s had failed in the field, he said, unless traceable to improper operating conditions.

Not so cool, Kevin—I think this pair did fail in the field: more specifically, in my listening room. Yes, I set the bias correctly and monitored it closely, too. The second pair of KT88s worked fine in the amp, as did the original pair of non-Dragon KT88s supplied by Quicksilver. I have no reason at all to suspect the Quicksilver amp. Still, Kevin did make good on his guarantee.

The amps themselves are beautiful—an astonishing buy at the price. ($2300/pair.) I find the chrome chassis aesthetically pleasing, and the KT88s, too, are lovely to look at. Incidentally, the chassis is slightly larger than the chassis of the "standard" Quicksilver KT88 amp, which is finished in black. And the speaker-connecting strip is much improved—easier to connect audiophile cables, not so cramped. Once again, Quicksilver has a winner. In fact, I'll go out on a limb and say these are probably the best values in a tube amp that I have ever encountered.

Are these the best tube amps? Probably not. With all the other changes in equipment, it's hard for me to give an absolute answer, but I think that both the VAC amps and the Defy 7 have even more in the way of transparency—delicacy, detail, etc. And good as the Quicksilver is in the bass, the Defy 7's bass is, I think, even tighter: better defined. But these other amps cost more. I can live happily with the Quickies and intend to do so. My overall impression is that they're greatly improved over the already excellent "standard" Quicksilver KT88 model, which is still in production. My advice: spring for the difference.

Meanwhile, Wayne Schuerman of Audio Advisor sent me a prototype of one of the new

Stereophile, September 1991
$895 VTL Renaissance tube amps. I was prepared to like it—except for just one fault. There was no sound coming from the right channel. The left channel sounded just fine, though. This was the prototype. I heard later that one capacitor was hooked up incorrectly.

Finally, I want to say another word about the Golden Dragon tubes. I've also tried their 12AX7As—substituting them for the GE tubes on the Quickies—with what I think is an improvement in overall smoothness and detail. I'm hearing very, very good things about the Golden Dragon 12AX7As used in preamps! It's reassuring to know that someone is doing something about assuring a supply of reliable, good-sounding tubes—even if they do come from Red China. And the prices for the Golden Dragon tubes are very reasonable—no one is being ripped off.

I gather that the Golden Dragon tubes were developed at the Shuguang tube factory in China, with help from British tube maven's now associated with PM Components. The tubes are boxed beautifully, too—I'm reminded of the menu cover at my favorite Chinese restaurant. (I think Kevin Hayes should include a fortune cookie with each shipment. Let's see, open up that cookie. What does your fortune say? "Your Shuguang Golden Dragon KT88s will give you many years of excellent sound, but watch the bias.")

With tubes like the Golden Dragons—and amps like the VACs, the Defy 7, and the new Quickies—it may be time for you to think seriously about tube gear, too. Of the tube amps I've had lately, none of the Quickies gave me trouble—I don't blame the amps for the Golden Dragon KT88 that went out. The VACs functioned flawlessly. And the Jadis—well, Count Veekh-tor has admitted his culpability there. I seem to have bad tube karma when it comes to VTL.

I gotta tell you this. Hyperfy had a pair of Manley 350s. No, they didn't explode or anything. But when he turned them on, he'd sometimes trip all the circuit breakers in the house. At night, the whole house would go dark. Flashlight in hand, Hyperfy would tear into the basement. It was wonderful.

Now, what's this?

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**Flash!**

After I finished this column, I had a problem with the other Quicksilver amp in which I had installed Golden Dragon KT88 tubes. I turned the amps on first thing in the morning (they’d worked fine the night before). I heard a sputtering noise and reduced output in the left channel. I checked the bias—sure enough, the left-channel Quicksilver was now biased at 50mA instead of 100. Drat! I changed to the original KT88 pair that came with the Quickies and the amp was still biased at 50mA.

At the moment, I’m trying to sort things out. Did the tubes fail, taking out the amp? Or did the amp fail, taking out the tubes? I’m not sure it’ll ever be resolved.

The failure of the second amp (tubes?) gave me a chance to listen at greater length to the Krell KSA-150, which was sitting silently between my Quicksilvers. Initial reaction to the Krell—and this is coming off a string of very fine tube amplifiers, mind you—is very favorable. One thing is certain: the bass alignment of the Krell is phenomenal—very powerful and very tight.

And there’s a complete absence of solid-state nasties. The KSA-150 has to be one of the smoothest, sweetest amps around, and it doesn’t require possibly volatile Chinese fire bottles to make it work.

So where does that leave you? Probably the same place it leaves me: confused. I mean, it would be easy if the Krell sounded shrill or steely—but it doesn’t. And just as Adcom and B&K have succeeded in getting themselves very close in sound quality to where the Krells of this world used to be, ampwise, now Krell has succeeded in getting itself up there another notch or two compared with the Krell KSA-80, for instance, which the KSA-150 replaces. (I don’t mean to dwell on Krell. However, I don’t have Jeff Rowland Design Group, Threshold, Mark Levinson, or Spectral amps in my listening room at the moment.)

Yes, there are “tube” qualities which no solid-state amp seems to touch—although the Krell is coming very, very close, while it has sonic virtues of its own, particularly in the bass. But it’s not just sonics you have to weigh: it’s the “pissing dog” phenomenon. It’s one thing to talk about tube-amp aggravation in the abstract, another to be actually faced with it—and, as you can see from this article, I’ve had my full share. The VTL 225s—EL34 Chernobyl. The VTL Renaissance 70/70—DOB (dead out of the box) in one channel! The Jadis Defy 7—with defiant capacitor. Now the problem with the KT88s and the Quickies. Tubes are sweet, but don’t be surprised if I wind up keeping the Krell.

**Still time for Russia?**

I dunno—I write this column so far in advance. The cutoff date for enrollments is September 9—earlier, if the tour is oversubscribed. You’ve heard the spiel before. If you want to go, Fed Ex a check for $500 payable to Finnair to Susan Stevens, Finnair, 12 Sunset Hill Road, Brookfield, CT 06804. Her phone is (203) 775-3739. $2695 plus $58 tax and visa application, double occupancy. We try to match singles. We leave October 9, return October 23. At this date, a late charge may apply, perhaps an extra $50. There may also be a small extra charge for added concert tickets (Moscow is supposed to fax me a Bolshoi schedule at the last minute, so I may have to pay up on tickets), plus $30 or so for a possible visit to a collective farm some miles outside Odessa. Comrades, come!
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I hate hi-fi stores.

Even after years of intensive Small Business Therapy, it appears my audemporiophobia will remain a destructive, debilitating syndrome (after all, I make my living selling to those places).

For maximum therapeutic effect I shall not presume with this article merely to perpetuate a manufacturer’s biases; I confess to having owned a hi-fi store at one time, and to working years as a salesperson in another; this message is directed at the music-loving consumer rather than at the few sincere and knowledgeable audio merchants.

From the outset, I must reveal certain sympathies with the proprietors of high-quality audio outlets; this is no easy business. Merely the selection of inventory is a daunting process. For example, 300 brands of loudspeakers are available domestically, offering in excess of 1500 models. Small wonder that our retailer has clogged his sales floor with systems that were in vogue only a month or three ago, but now stand orphaned by their erstwhile champions, the critics. Audio retailers are besieged almost to distraction by clamoring sales reps, deepfringe consumers, and ever-changing magazine recommendations; forgive them for less than startled enthusiasm when you appear at their doorstep demanding a brand they cannot carry, or lack the space to demonstrate adequately.

And my oh my, look at those prices. Individual components securing five figures are no rarity, nor are complete systems costing six. Discounts may well be impossible to find, particularly in the high-rent districts the best outlets often inhabit: this industry generally works on a margin of 40% from retail; the dealer’s overhead frequently gobbles 25 to 30% of that cushion. During the slow season, even the established high-ender who advertises nationally may experience a crunch or worse. Small suppliers such as myself therefore learn to regard the merchant’s business check not as a solemn promise to pay, but as rather a kind of personalized sweepstakes ticket where one indeed may not already be a winner. Whenever I read favorable press comment on an esoteric product followed by the caveat “poor distribution” or “limited availability,” I sympathize mightily with its maker: often as not, in my opinion, this is a man who insists on payment in advance from his customers.

Still, the dedicated audiophile has little choice, and often ends up patronizing the modern, metropolitan, storefront salon staffed by salespeople whose demeanor suggests they know more than you do. And they speak a language all their own: “Say, can I interest you in our new Groovedigger phono cartridge? Happy Earson gives it three stars in the $5000-and-up category! No? Well how bout these great ‘CD’ interconnects from Wiredwire!” (“CD” means “Certificate of Deposit”) I” “J. Meter Pontiff says they got the most Intransigent Silence he’s ever heard!” etc., etc. Pause not to ponder who or what they’re talking about; search for the main soundroom, recognized by picture-window walls and a phalanx of loudspeakers arrayed therein like Space Invaders.

Enter and shut the door; you will need a few minutes to yourself. In these contemplative moments, a flash of insight impacts my psyche: this room is why I don’t like hi-fi stores! It is here that music is mangled, good brands can sound worse than bad ones, and what you hear is definitely not what you get. So let us do something about it. Fortunately, you prepared for your visit by bringing such necessities as handtruck, hammer and nails, marking pen, masking tape, your favorite records, and about 30 lengths of hookup wire 6” long, with alligator clips on each end. Before starting to listen, I want you to make a few alterations for the sake of musical accuracy and an informed buying decision. Here’s what to do:

Find a comfortable chair and place it in the

---

1 Author Brian Cheney, when not busy making his VMPS loudspeakers somewhere in Northern California, recommends "Louie the Brick" Collection Services after 60 days.

Stereophile, September 1991
LIGHTNING STRIKES TWICE!

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*Distortion, at <.0018%, is unmeasurable with standard audio test equipment.
reared the third of the room, near the signal source. Clear the wall behind you of superfluous items and take down any damping material you find there. Roll up the rug so that it stops well in front of your chair, leaving you sitting on wood or concrete. Move all loudspeakers (handtruck!) except the pair you intend to audition, and stack on the wall behind. As you do so, attach the jumper cables you have brought across the input terminals of each system, shorting them out. Make tall, irregular columns and stack the speakers so that they face each other on the rear wall. Leave occasional 3" to 8" gaps between columns and place planar speakers on edge, perpendicular to the wall.

That's much better. Now, take the damping material (Sonex, fiberglass panels) removed from the listening end and use hammer and nails to affix it to walls and ceiling of the speaker end of the room. If necessary, ask the salesman for more damping material to cover these surfaces fully. Position the speakers to be audited at favorable spots in the damped area (some hints: dipoles belong well out in the room, as far apart as they are from the side walls; box systems with rear-firing vents need a back wall no more than 3'-away; minimonitors need baffled stands high enough that their woofers [or tweeters—Ed.] are at seated ear level); mark the best placement with your masking tape and write the system name on the tape with the marker. Repeat with each system of interest, returning the pair not in use to the stack behind you.

Congratulations: You have transformed what I feel to be one of the world's notoriously bad listening environments, a dealer showroom, into an acoustically correct2 Live-End/Dead-End complete with diffuser grating on the rear wall! Be cautioned that store personnel might not fully appreciate the magnitude of your accomplishment. Should anyone object, refer them to me, and I'll do my best to have your bail reduced.

In addition to mainstream audio dealers, there has been a proliferation of a curious alternative: the one-man outlet selling name-brand sound from his living room. Lacking funds to purchase an army of boxes, this fellow displays usually only one or two speaker systems, the listening space being generally treated to flatter their output. If your product interest is represented by such a fellow, give him a fair try. If you hear something you really like, take it home for a test audition, for as long as the poor retailer's patience permits.

It would appear our 50-minute hour has expired; enough for today. In any case, I hear my faithful ethnic sidekick/credit manager, Kato, yelling that the buyer from the big Egregious Audio chain is on the horn again, asking 10% everned forever terms, six months' free flooring, and 90-days-same-as-cash. Now, if I can just find the detonator button on my fax machine... —Brian Cheney

The truth about mail-order?
Editor:
In his June 1991 "Dispatches from the Front," Mr. Singer argues that high-end audio is too complex to be sold by mail, and that people only purchase by mail for a low price. In the August issue angry readers tell us Mr. Singer's retail store, Sound by Singer, has a mail-order ad in every issue of Stereophile. Sound by Singer is selling very sophisticated high-end audio products all over the country.

In defense of his ad, Mr. Singer's letter claims that shopping by mail is sometimes the customer's "best alternative." His store doesn't sell by mail based on price. Customers call him because they don't have a local source for the product or they don't like their local dealer. Mr. Singer insists it's the character and experience of the retailer that determine the success or failure of an audio installation—whether done by mail or by "being there."

In his letter, Mr. Singer finally begins to accurately describe mail-order. Mail-order isn't good or bad—it's just another way of serving customers. Customers should expect to receive the same friendly, expert advice and service—whether they purchase locally or by mail.

The biggest myth about mail-order is that customers purchase by mail mainly to save money. But all the recent studies show people order by mail mainly for the convenience. It's easy to see why. Mail-order lets customers shop leisurely at home without sales pressure. Delivery is fast and easy. Satisfaction is guaranteed, or the customer's money is refunded.

Mail-order is a great way to serve customers. Mr. Singer knows this. That's why he has a mail-order ad in Stereophile.

Wayne Schuurman
President, Audio Advisor

Stereophile, September 1991 83
Introducing Renaissance: The rebirth of tube amplifiers.
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Now you can own one of the world's best sounding stereo amplifiers for one of the world's lowest prices. Audio Advisor is proud to introduce the new Renaissance Series from Vacuum Tube Logic (VTL), unbelievable stereo and mono amplifiers that any audiophile can afford.

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When the Compact Disc was introduced in 1982, it was assumed by the general public that first-generation CD players were “perfect” and no improvements in sound quality were necessary or even possible. But a small company in Cambridge, England called Boothroyd-Stuart challenged the status quo with the Meridian MCD, a modified version of Philips's first player. Reaction to the MCD ranged from puzzlement by the mainstream press and purveyors of mid-fi to enthusiastic embrace by music lovers and audiophiles.

The man behind the MCD was Bob Stuart, now Technical Director of Boothroyd-Stuart, designers and manufacturers of Meridian products. Longtime readers of what was then called Wireless World may remember “J.R.” Stuart's articles on tape recorder circuitry that appeared in the early '70s; in 1972, Bob designed an audio amplifier for a new company called Lecson, which was where he met industrial designer Allen Boothroyd. The two of them formed a design consulting firm called Boothroyd-Stuart and Partners in 1975 and after a couple of years of that, got into manufacturing, with the Meridian M1 active loudspeaker being launched in 1977.

Since the prophetic MCD, Bob has established a history of designing highly regarded products, including the Meridian 203 digital processor, the 208 CD player/preamplifier, the 602 CD transport, and the innovative D6000 digital active loudspeaker reviewed in this issue. Meridian products reflect Bob's belief that audiophile performance, user convenience, and attractive styling are not mutually exclusive qualities.

Bob is also at the forefront of correlating measurements, especially of digital audio systems, to subjective performance—his first degree was in electronic engineering and acoustics, there not being such a formal field of study as psychoacoustics at that time. His audio philosophy embodies the best of both the listening and measurement worlds. He seems equally comfortable in the laboratory and the listening room.

On my way back from the Audio Engineering Society convention in Paris last February, I interviewed Bob at the Meridian factory to share his insights into the state of digital audio today. I began by asking him what he thought of Compact Disc the first time he heard it...
Bob Stuart: I heard CD for the first time in Paris in the Spring of 1982. I actually heard it in an audiophile booth—it was being demonstrated for the express purpose of showing us all it was no good. (That wasn't the first time or the last time.) It was clear to me, even then, that it had some considerable merit. We had done some quite interesting listening tests that were written up in *Gramophone*. There was a very, very strong anti-digital feeling—even before CD. If you remember, digitally recorded tapes were then used to make audiophile LP records. At that time, there were strong feelings among audiophiles that it didn't work. And sometimes it hadn't worked—no question.

We got together with our dealers and set up statistical listening. We set up a very transparent playback system and gave them the ability to switch in and out a digital processor chain—the signal didn't go on to tape, it was just A/D and D/A conversion—with switching under the control of a computer. And nobody in the room knew when [the digital encoder/decoder] was switched in—only the computer knew, so there were no cues. We did the test over the weekend and it was very hard for them—in fact, they couldn't tell when the digital was switched in. There was something wrong with that test, it turns out, but it did prove to them that [digital] wasn't a travesty.

Probably the thing that struck me most about CD was the opportunity to have a source which was reliable and stable. I personally was driven crazy by turntables and cartridges, speed stability and vibration. It always changes—you go to do a demonstration and it's 10 minutes to set up the equipment and three hours to get the turntable working properly. But to me, the one thing was how stable [digital] sounded.

People have different sensitivities to problems in audio, and I'm very sensitive to pitch change, even if it's quite small. There's quite a large gap between what you can do to reduce wow and flutter and getting it down to the point where your perception of wow and flutter changes. Quite a lot of very good turntables do actually wow, even some very well respected turntables. To me, the most stunning thing about CD was that you heard a piano standing on the floor for the first time. It was just that stable. But there were a lot of other problems with it which were clearly heard.

Robert Harley: Was it that combination of recognizing the CD's merits with the confidence you could remedy some of the audible problems that led you to modify CD players early on?

BS: We took what was then, to our ears, the best CD player—the Philips CD100. It was obvious that it was essentially designed by digital engineers and there were all kinds of things that weren't right. So we were able to bring first our analog expertise to improve the output stages, the power supplies, and the exact environment that the D/A converter itself was in.

Then, as we continued to work with CD, we discovered certain things like when you put another disc on top of the disc you're playing, the sound improves. And we ended up investigating the issue of damping the disc and comparing the difference in a CD player's sound quality when it's in the same room as the loudspeaker. You learn very quickly that the disc is being caused to vibrate, partly by building and environmental noise that you can deal with, but also by the music which is impinging on it. A CD has got some quite high 'Q' resonances in the midrange—1200, 1800, 2400Hz. So we proved to ourselves that the effect of disc damping is not optical, it's mechanical. There were ways we had to deal with it, and the early machines involved partly mechanical cures by putting damping on the disc.

This got us into a lot of trouble. There was a whole sector of the audio community who are not audiophiles and who understood completely that Compact Disc and all digital audio was destined to be in audio's future. They were very scared that audiophile tweaking of this "perfect" medium was being encouraged.

The audio community was very scared that audiophile tweaking of this "perfect" medium was being encouraged.

Anyway, we persisted and showed to our own satisfaction that there were effects in the machine that had mechanical causes. By the time we did the MCD Pro, we had established servo interaction, jitter, and D/A problems as causing audible problems. So it was a very
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**RH:** *We were talking last night about your theory of how very small perceptual changes in reproduced music are important.*

**BS:** I invented a law to wake up people: the "Law of the Increasing Importance of the Smaller Difference." It highlights one of the things about human perception which is that we do tend to care more about smaller differences. It's exactly what you were saying last night about how the differences between people's faces are objectively quite small, but we can recognize hundreds or even thousands of faces that are nearly the same.

The same goes for many other things we perceive—like the differences between coffees, teas, and the sounds of instruments. The differences between people are really quite interesting because if you took what I call the "audio engineering establishment view" of people that is taken toward power amplifiers, then we would say that people all looked the same. Broadly speaking, they're the same dimensions. It just highlights the point that as audiophiles—as discriminators of *anything*—we're much, much more interested in smaller differences. You don't find people really getting at all interested in the differences between tea and coffee, or a tree and a dog. But people are interested in different kinds of dogs.

**RH:** *People are especially interested in small differences within a particular breed of dog—like at dog shows.*

**BS:** Right! You see that trait in all areas of human activity. I think it reflects a basic mechanism in our perceptual system—that we are intrigued as much by the *differences* between things as much as by what they are. We're not programmed to hear differences between D/A converters, but it's obviously important in some sense.

**RH:** *How often do you listen to live music, and how critical is listening in design work?*

**BS:** I listen to live music a lot. Living in Cambridge, England, my opportunities to hear live music are tremendous. The amount of music performed by students and orchestras is immense. I normally go to, on average, three concerts a week; my predominant interest is in choral music and classical music of various sorts. So I'm very close to the sound of the real thing.

In terms of design, we do a lot of listening, but intensively at various stages in the design of a product. Maybe that would take 10 or 15% of the time taken on a project. A lot of the time is taken on straightforward engineering. We have a listening room here. I listen in different ways. I listen to a lot of music, recorded and live. But I don't need to listen to a piece of equipment for long to decide what I'm going to do to it. It's usually quite obvious whether something's better or not, if we're moving in the right direction or not. So we always go back and check. Whenever we make a judgment it's spread over several days.

**RH:** *I think it's fair to call you a "1-bit designer"; you seem to be at the forefront of 1-bit DAC design. Do you think 1-bit offers a real improvement over conventional multi-bit ladder DACs, or is it a convenient way of making players and decoders less expensively?*

**BS:** The problem with the kind of DAC you use is very much involved in how you're going to make it in production. We've always used—so far anyway—the Philips Bitstream DAC. Philips also managed to produce multi-bit DACs with a great deal of accuracy. There have been many other manufacturers of multi-bit DACs who haven't been able to do that. I'm sure you're completely familiar with them from the measurement of CD players. For some strange reason they can't get it quite right; if you turn the trimpot (the MSB adjustment) you get a much better result. The truth is, multi-bit DACs, when they have adjustments, can be nightmares; the potential is there for misalignment. There are many kinds of monolithic DACs where you can have a perfectly good working DAC, but it may go off over a period of time.

*I'm completely confident that the ultimate performance of a D/A converter will come from a 1-bit system.*

So the 1-bit DAC has a very powerful argument, in that 1-bit is uniquely matched to itself. So you have much better linearity than with a multi-bit DAC, no matter how it's done. And to the customer, it's quite important that it stay like that. With the advance and understanding of noise shaping, I am completely confident that
Speakers are the most important part of your stereo system. It is the speaker that turns amplifier signal into sound and so ultimately determines what you hear. If your speakers do not perform well, your stereo system will simply not sound like music.

The search for musically satisfying speakers, however, can lead to some very expensive products. And if you have already bought those high priced speakers, then you better not listen to Paradigms. But if you haven't, better not miss them. Why? Because from the time they were first introduced, Paradigm's sheer musical ability utterly amazed listeners... but what caused even more amazement was the unprecedented low price.

So avoid the expense and the agony. Visit your authorized Paradigm dealer... and listen to the clear choice.

The critics agree:

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- Hi Fidelity Magazine

"... the Paradigm is no more colored than speakers costing up to two or three times its price, and gave a consistently musical presentation... Conclusion: the Paradigm offers excellent performance at a very competitive price..."
- John Atkinson, Stereophile Vol. 11 No.1 January, 1988

Paradigm
music... above all
the ultimate performance of a D/A converter will come from a 1-bit system, although you could approach it very, very closely indeed with a multi-bit system.

We read discussions of multi-bit DACs and discussions of 1-bit DACs and Bitstream technology, but actually underlying the things that people are writing about are other technical differences, which in my opinion are as important as 1-bit. For example, the generation of Bitstream converters we use in the 203 and subsequent generations from Philips are unique in two respects. In the first place, they have 1-bit conversion and therefore exceptional low-level linearity. It is perfect into the noise floor. It’s still working well down to -120dB, which I believe is important. But the other thing is it is also the first generation of CD or digital audio that uses correctly dithered digital filters. Although dither has been known for quite some time, I don’t think it was as widely used as it needed to be.

I sometimes describe [lack of dither] as one of the great scams of the CD industry. The fact is, CD players and converters have digital filters and these filters do computation—and do it quite well. But whenever you perform computation, you’re also requantizing the data: it should be redithered. If you don’t redither the data, you run into problems and introduce all kinds of distortion. As far as I’m aware (and I’ve checked it very thoroughly), this generation of Bitstream is also the first generation to apply dither to the digital filter. Now, I’m sure that redithering wasn’t done because it would be good thinking or because of how it sounded, it was done because it’s what you actually have to do to get rid of idle tones that would clearly show up on the spec sheet.

But it had this extraordinary and quite important result that now we had a DAC system that had dither on-board, and the measurements show that that system is actually capable of dealing much better with incorrectly dithered program material than a multi-bit DAC. One of the criticisms leveled at digital audio very early on was that, as the sounds got quieter, there was no tangible floor; it was black at the bottom. Listeners were looking for a noise floor. But you could show with measurements that if you don’t dither correctly, the sound does just drop off. In this generation of DAC we had an immediate response from all kinds of listeners and music lovers—people into the turntable as the ultimate source—who suddenly said, “Wow, digital has really arrived.” I believe what they’re responding to is the exceptional handling of low-level detail that you get.

In fact, if you asked me to characterize the sound of Bitstream, I would say that one of the things to listen to first is the ambience. The musical object is placed in the acoustic in which it was recorded, the DAC clearly resolving the low-level information that tends to get lost very easily. Normally you can just listen to a recording with that kind of information and it comes straight through. The system doesn’t have black at the bottom: when the music stops, there is a stable, clearly defined residual noise level that comes from the dithering in the DAC. That may or may not be audible, but you don’t get very large changes in the noise floor.

If you move further into that whole area, what you see is that different conversion systems produce different modulation noise. I came up with three measurements on a DAC: you measure its digital silence; you measure its response to correctly dithered low-level tones; and you measure the spectrum of noise that comes out of it when you decode a full-scale, very low frequency, undithered tone. That last test shows you what the quantization noise behavior is like, the other shows you the dither, and the first one shows you digital silence. In my opinion—and you can prove it on an intuitive level—these curves should overlay. In other words, if these three measurements are made and they match, you would have zero modulation noise.

But it does depend on what you mean by modulation noise. One form of modulation noise is noise that isn’t there in silence, but is there as soon as the signal comes along. In all the multi-bit systems I’ve measured—not necessarily because they’re multi-bit, but because of the lack of dither—you can have in excess of 20dB of modulation noise. The way a DAC behaves on an incorrectly dithered signal is very important because the bulk of the material isn’t correctly dithered. The way it behaves on a correctly dithered signal is also important, but I believe that measurement describes to you quite a lot the differences that are perceived, at least in the UK, between Bitstream and multi-bit systems. The large noise-floor changes in multi-bit systems lead to a [spurious] delineation of the sound. The sound is very

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much more exciting because you don’t have modulation noise attached to the original musical object in a way that delineates it.

It is rather like a visual analogy: you have a picture and you draw dark blinds all around to make it more clear—that’s what this kind of modulation noise does. On the other hand, when you improve the system, you get to the point where modulation is of the order of 3½dB. Our perception of that noise change is different. It also attaches itself to the envelope of the music, but in such a way that it tends to soften the sound. This generation of Bitstream systems are very, very precise, but a little soft in the bass. That is perfectly explainable because the low-frequency energy tends to have a slightly moving noise floor.

RH: What mechanisms do you find account for the sonic differences between CD transports?

RS: That’s a very difficult question to answer. From an engineering level we can say all sorts of things make a transport sound different, including the success in reducing vibration and isolating the servos, separating servo signals out of the digital processor. The only real analog part of a CD transport is the servo system and the oscillator. As you know, the problem with all digital is that each digital stage is quite analog; you can measure the way jitter propagates through every gate. Jitter is always generated by the transport.

Transports will sound different partly because of the mechanical and acoustic features leading to problems in their own digital output signal, and also because of their relative success or lack of success in the interface to the DAC through a cable. We’ve had an interesting time with the S/PDIF interface, where the use of certain audiophile cables to connect a CD transport to a DAC converter certainly changes the sound; the reason is the impedance mismatch is so bad.

In CD players there are several areas of non-ideal behavior, one of which is the shape of the HF signal itself! But there is absolutely no doubt in my mind that the quality of the HF signal is very important because it will propagate jitter downstream.

RH: What are the tradeoffs between optical and coaxial digital interfaces? Meridian seems to recommend optical over coaxial.

BS: We don’t always recommend optical. The reality is that optical is only best when you have a non-ideal EMC [electromagnetic compatibility] situation in the system. Because in all the areas that matter, like the ability to transmit a correct squarewave with as fast as possible leading and falling edges, then the Toslink system [the optical jack found on most inexpensive transports and processors] is much worse than coax—it’s worse every time.

The main difference comes from the fact that there isn’t a ground connection of any sort between transport and converter. My experience is that, on many systems, the lack of a ground connection can make a more dramatic difference than the type of interface. So you find that you get a cleaner sound with optical—not because optical is better, but because the system works better with an optical interface. I would be happier with optical interfaces downstream, because electromagnetic compatibility is a big problem with audio equipment.

RH: How far are we into the digital learning curve? Are there fundamental things we still don’t know about digital, or will improvements come from refinements of existing knowledge?

BS: There are a lot of things we don’t know. With D/A conversion we’re well up the learning curve, but there is quite a long way to go. All the things that were considered, like linearity and jitter, aren’t yet fully understood psychoacoustically. I can certainly see that within two to three years we’ll be able to produce conversion systems more routinely which will satisfy the psychoacoustic objective that we currently—or that I currently—consider to be important. In other words, all the ways I’ve found to measure something to tell me how it’s going to actually sound will have been solved. We have to do more listening and find out more answers. There is clearly a huge gap between what we measure and what we’re capable of hearing.

Conversion is just one aspect of digital, and frankly, I’m really pleased to be working at this time. It is tremendously exciting.

We have the next generation of digital audio coming along which will use compressed coding of some description because it is economical to do so. We’re looking to how else we can

1 The HF (high frequency) signal is the raw signal retrieved from the disc, comprising nine discrete-frequency sinewaves between 196kHz and 720kHz. The digital data is encoded in the zero crossing transitions. See Vol.13 No.5, pp.73–77 for a discussion of how the HF signal is generated by the CD.
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have a large number of channels, how else we can have solid-state storage of music and the possibility of having recordable media like DCC or recordable CD that will use compressed audio.2

But these are very worrying because digital audio gives us tremendous power—the power of the moment. We're like adolescents. The research, the understanding that we have, is not as complete as it should be at this point to decide or to make definitive judgments on things like [data compression standards].

It's not clear in my mind how well digital was understood by the prime movers, and that's one of the worries. I would feel much more comfortable if I thought that Sony and Philips had known back in 1982 that you could actually encode on a 16-bit linear system 120dB dynamic range as far as the ear was concerned. I think that we were lucky. I think we really were lucky that it was able to be pushed as high as it has been. We made judgments too early on in the chain about what we can and can't hear—you can see a decline in the standards.

RH: How much correlation do you find between measurements and sound quality?

BS: It's certainly true that the measurements of any piece of audio equipment don't describe its sound. I don't think digital audio is any worse off than analog, to tell you the truth.

It's difficult to get a handle on how electronics sound by measuring them. I think that these problems are very real. The fact that we can hear differences—and there is no doubt we can hear differences—means that we really have to pursue hard—an understanding of this problem. Indeed, that is my particular passion—to try to explain the differences that I hear. I think with some types of audio equipment, we haven't begun to measure them. Measure a power amplifier, and it is actually very difficult to describe with a set of measurements that would describe or explain how this component sounded different.

Digital has brought us a new way of looking at measuring and new ways of introducing distortion, and that's why I have spent more time looking at the audibility of distortion, partly because we are in an area [digital] where distortion can still be considerably worse than analog. For example, in an analog system the distortion can't come out before the signal as it can in digital equipment—you've got a whole new area of potential problems.

My view over the past few years has been to try to design electronics that relate to human hearing capability. Part of the problems we get stuck in are problems of tradition. For example, the criteria by which we measure a power amplifier come from the 1940s. We measure power output, frequency response, total harmonic distortion; we measure it with the instruments that were available at the time. But there was no reason to assume that average reading meters tell you anything about distortion on dynamic material.

The problem is to join the gap between any objective measurement we can make and the psychoacoustic situation. It involves knowing the sound pressure level at which you are going to reproduce music. It involves knowing the huge gap—the huge gap—between all theories of hearing, which are based on single tones and noise program—and the way that hearing mechanism works when listening to music.

We prove the equipment and ourselves with sinewaves, and then we try to make judgments about how both fit into music, which has not sound in it, but "objects." It's not a collection of tones, but a collection of acoustic objects. One of the concepts that I very strongly try to introduce is the idea that acoustic objects are created in our heads when we listen. You don't hear noises or tones, you hear a violin or somebody speaking. An acoustic object can be very complex. It can be one instrument or a collection of instruments, but that is what we hear. We hear it because the ear has certain common features that combine to create the perception of an acoustic object. It's a very, very complex, very non-linear process. It is most difficult to decide what is and what isn't audible because a small distortion could be quite significant unless it happens to provide a feature.

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which will then change the object we will perceive.

When you start to look at it in this way, you realize that it is in line with the kinds of things we hear when we listen to audio equipment, what we hear in audio equipment. We make a change to the circuitry, and the sound changes, and the sounds that are changing are the objects, or we suddenly hear another one.

For example, when we worked on improving a particular digital processor, not only did the voice get clearer, but we heard the guitar in the background that we hadn’t heard before. Then we improved it more and it became two guitars and then one of them actually turned out to be a mandolin. Now the differences in the objective sense between the two sounds were very small indeed, and yet subjectively, you would say they were total. The differences between a guitar and mandolin are 100%—the increasing importance of the smaller difference.

But what I’m trying to point out is that the way we perceive things is very different. We have to be very careful when we work backwards from very small objective changes to the kinds of errors audio equipment introduces and defining their importance. Now, I think there are certain absolute things we can decide . . . For example, the human ear is capable of incredible discrimination, but it doesn’t have infinite sensitivity. There is a well-established threshold of hearing and there are also very creditable experiments that show you can hear sounds that are below the threshold of hearing. You can put them out by having other sounds, but those other sounds stop at 10dB below the threshold. In other words, if you’re trying to define the problem, you could say that an audio system is perfect if it doesn’t produce an error louder than 10dB below the threshold of hearing.

But any steps you take from that point on must be taken with great qualification, especially the idea that errors can be masked. You have to look at the system, you take this criterion to measure one component like a DAC converter or a power amplifier, then you have to connect them together and make the same judgment on them as a system. Is there going to be anything in the way this works when it’s together which is going to produce errors that are related either to the signal or to the envelope of the signal?

In fact, we’ve been having a lot of fun lately applying the kinds of measurements we do on digital audio systems to analog systems. You look at crossover distortion in a power amplifier and compare it to DAC non-linearity. I think it is very important to explain the differences, to understand, but it is a complex problem.

**RH:** Why is there such a dichotomy—even hostility—between those who listen and those who measure?

**BS:** In any area of human endeavor, there are people who can either perceive the difference or who care to perceive the difference. For example, in this country, while two of the very respected members of the audio community of long standing believe firmly that all power amplifiers sound the same, they don’t believe that about the taste of whisky or good claret. They are very passionate about the differences between whisky. Now, to someone who is interested to listen, it’s perfectly clear that power amplifiers do exhibit some differences—there’s no question about that. If you cannot hear those differences, it is either because you don’t want to or you don’t care, or you haven’t prepared the setup or the circumstance where it could be shown to you. I find there is a tremendous resistance in the audio community. It’s a very depressing thing. There is a current generation of engineers who are tremendously dogmatic about the objective thing. In other words, they would say that an amplifier with flat response and low distortion that didn’t clip and passed the nulling test must sound perfect. And the answer is that these are all good things to do, but you can hear a difference.

**RH:** Do you think blind testing is useful, or is it fundamentally flawed?

**BS:** I think it can be useful, but I’ve never considered whether it’s fundamentally flawed. What I do know is that there are many kinds of subjective tests that introduce a degree of stress that tend to impair the subject’s performance. I find that I’ve now reached an age where I know that I can hear the difference or not. And I can have that checked by a blind test.

**An audio system is perfect if it doesn’t produce an error louder than 10dB below the threshold of hearing.**

Stereophile, September 1991
But for some of the differences we listen for and to, you have to be in the right mood, and not under pressure. I'm happy to do a blind test provided I'm very comfortable about the system I'm listening to. One of the problems of blind testing is that you are presented with a system that isn't transparent. We do blind testing occasionally, but we tend to do absolute listening that you can compare in your own time at your own speed.

Do you agree?  
**RH:** Absolutely.

**BS:** Aside from the fact that it's a non-doable experiment, I'm entirely confident that if you looked at any area of perception and created pressure tests, obvious differences would vanish. It's like the differences between wines or coffees; we've all seen tests that are conducted where people who are connoisseurs of coffee, under pressure can't tell the difference between tea and coffee. And yet there is absolutely no question they can identify differences under the right circumstances. That's the whole point: when you construct a test, you really have to know what you're doing, unless your objective is to prove that there isn't a difference, in which case you can be quite successful. As you know, there is a growing feeling that blind tests are flawed. But I haven't yet talked in detail with Michael Gerzon about his theory that A/B tests are invalid.³

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³ Michael Gerzon is presenting a paper at the October 1991 Audio Engineering Society Convention in New York that suggests blind testing is fundamentally flawed as a technique for revealing differences between musical presentations.

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The thing that really irritates me is that so-called “objectivists” claim to be scientific.

The thing that really irritates me is that so-called “objectivists” claim to be “scientific.” To me, the most unscientific thing you can do is to hear a difference and then measure the
equipment and say, “No, the difference didn't exist. There can't be a difference.” If there is a difference, then there is a difference. And it may be more or less important, but you mustn't make value judgments. That's ever so important whenever you get involved in this kind of discussion. People say there is no difference, and you say, “but what about this,” and they say, “Oh, yes, but that's not really important. Oh, we know about tabi.” What they're really saying is that they believe that all differences can be measured. And I agree: it's just that we don't have the instruments. Just because we don't have the instruments doesn't mean we shouldn't try to find out what is causing the differences.  
**RH:** What was the genesis of the D6000 [Meridian's second digital active loudspeaker]? It's an unusual product.

**BS:** Yes, isn't it. [smiles] Well, one of the reasons we started the company was because I believed very strongly in active loudspeakers. An active loudspeaker can be much, much better than a passive loudspeaker. There are a whole bunch of reasons why that is true: the power amplifier is connected directly to the drive-units, and the fact that you can do the crossover at a low level in the analog domain—these are huge compromises in a passive speaker. [The D6000’s crossover is in the digital domain. —RH] We've made consistently a series of models that were self-contained.

One of the problems with passive speakers is getting the signal intact to the speaker. We're very interested in digital audio to get the signal to the speaker in the digital domain. Our first digital speaker, which we showed in 1985, was a version of a speaker we made at that time called the M-100 which was our top of the line, where we put a D/A converter in the speaker at a public exhibition and the thing was driven from a computer, although we sent the digital audio in parallel form at that time. [laughs]

But it really was an interesting step forward. As you know, we made the D600⁴ which addressed a whole lot of other problems to do with the user interface and the idea that the loudspeaker was essential to the system. I had this fairly radical idea that in the end—and “the end” is always 15 to 20 years from now—sources will all be digital and music will be coming out of the wall. The only components

⁴ Reviewed in Vol. 12 No. 11.

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that you end up with are the remote control and the loudspeakers. So we've tried to put the center of focus on the loudspeakers. In the D600 we started to explore that, and it's perfectly logical for us to try to embrace more of the speaker in the digital domain, particularly in the digital crossover. There is a huge potential for improvement in quality if you can create a crossover that cannot be made with analog components. You can have slopes as you want, you can break apart the phase relationship and can adjust the phase response independently—which in fact we do in the D6000. It was also an exercise in dynamic range. I wanted to show that, with DSP and the conversion techniques we developed, the dynamic range could be achieved. We were trying to go for 118dB [dynamic range] at 3kHz, which is the maximum dynamic range of human hearing.

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If I had to describe what D6000 is about, it reproduces music that is as natural, as open, and as transparent as it can be. It's not intended to be a whiz-bang machine with a lot of gimmicks.

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THE GROUND FLOOR

Peter W. Mitchell

When loudspeakers are manufactured, their response varies slightly from sample to sample because of normal manufacturing tolerances in cone mass, suspension compliance, magnet strength, and crossover parts values. There are also mechanical resonances in the cones, elastic surrounds, dustcaps, metal frames, and so forth. Obviously, if these variables cause one speaker in a pair to be louder than the other at certain frequencies, the sonic image at those frequencies will be pulled toward the speaker containing the greater emphasis. What is less well known is that irregularities in frequency response also correspond to differences in signal timing, which may cause sounds to arrive slightly earlier or later from one speaker. The bottom line is that stereo imaging is intimately associated with frequency response.

This connection is not often discussed or widely recognized. But one of the basic rules of audio physics is that nearly every significant departure from flat frequency response corresponds to a phase shift; i.e., a change in signal timing. The phase curve can be calculated from the frequency response (or vice versa) using a mathematical operation called the Hilbert transform.

In engineering jargon, if a product's actual phase curve agrees with the phase curve calculated from its frequency response using the Hilbert transform, it is said to be a "minimum-phase" device. This is true of everything from amplifier tone controls to the rolloffs at the ends of a speaker's range (below 50Hz and above 20kHz, say). It is also true of the myriad little resonances that cause a speaker's measured response to look slightly ragged compared to an amplifier's dead-flat curve. So the smoother and less colored by resonances a loudspeaker is, the more phase-linear it is likely to be.

Studies have confirmed that most loudspeaker drivers and crossovers are minimum-phase devices. As far as I know, the only departures from flat response in a loudspeaker that are not minimum-phase are those whose origin is basically geometric; i.e., those involving differences in sound-path length—for instance, diffraction at cabinet edges, a tweeter's off-axis droop, reflections in the listening room, and cancellation dips that occur when woofer and tweeter outputs arrive out-of-phase at the microphone or at your ear.

Virtually all analog electronic circuits, including graphic and parametric equalizers, are minimum-phase devices. Despite the name, this doesn't mean that they produce "minimum" phase shift; it means that they produce the amount of phase shift that is calculated from the Hilbert transform—neither more nor less. Consequently, when you use an equalizer to adjust a system's frequency response, you do introduce phase shift. Because of this (and because of the general principle that the fewer electronic circuits in the signal path, the better), equalizers are widely scorned in high-end circles.

Perhaps the worst examples of the breed are graphic equalizers that contain a pink-noise generator, measuring microphone, and spectrum analyzer display. The idea is that you'll measure the system's response at your chair and equalize it to be flat. Usually the resulting sound is dreadful, not only because of the phase shift added by the equalizer but, more importantly, because you are trying to equalize out problems that are basically geometric in origin, such as off-axis sounds reflected by room boundaries. Boosting the highs to compensate for drooping off-axis response and room acoustics is likely to cause the speaker's direct first-arrival sound to be harsh, aggressive, and ugly.

However, if you were listening only to a speaker's on-axis sound (in an anechoic chamber, for example), and if the woofer and tweeter were optimally aligned, then all of the speaker's departures from flat response would be minimum-phase. In that case, each peak or dip in the speaker's frequency response would have an associated phase error. Then, if you used an equalizer to restore flat response, the equalizer's phase shifts would be opposite to those in the speaker, and they would neatly cancel out! In this idealized situation, an equalizer could be
a very good thing. Equalizers are not inherently evil; the problem is that they are widely misused. In any case, in most real-world situations the most efficient route to good sound is to use a loudspeaker with inherently smooth drivers.

When discussing a new loudspeaker, audiophiles often praise or criticize its soundstaging as if good or bad imaging were a property of the system's design. In part, of course, it is. Imaging is particularly influenced by a speaker's radiation pattern—its tendency to spray sound off the walls at some frequencies rather than focusing all the sound forward in a coherent beam. One of the major attractions of the classic flat-panel speaker (electrostatic or other) is its figure-8 polar pattern: sound radiates to the front and rear while a sharp null at the sides minimizes image-smearing reflections off the side walls.

But the single most important determinant of a system's soundstaging is not design but the manufacturer's quality control—the ability to produce two speakers that have exactly the same response.

If the two speakers in a stereo pair are not precisely matched in frequency response, they also will be unequal in signal-propagation timing—and that will impair their ability to form an accurate stereo image. The human hearing system is acutely sensitive to signal-arrival timing when determining the direction from which a sound came. For casual listeners a difference of 30µs in the timing of sound arrivals at the two ears is enough to produce a noticeable lateral shift in the apparent direction of the source. Trained listeners can hear a 10µs difference.

Suppose, for example, that in one speaker the crossover is at 1800Hz, while in its companion the crossover occurs at 1500Hz because of a 20% difference (a typical tolerance) in the value of a capacitor. The frequency response of both speakers may still be flat within ±3dB, but there will be a disparity of about 50µs in signal timing for frequencies near the crossover. Result: when an oboe plays a note, its fundamental frequency may emerge simultaneously from both speakers while its harmonic overtones emerge slightly earlier or later from one of the speakers, pulling the apparent positions of the overtones several degrees to the right or left and effectively smearing the image of the oboe in the soundstage.

I'm writing this in a London hotel room, a few blocks from the legendary 221B Baker Street residence of Sherlock Holmes. I've been listening to the first two prototype samples of a new British speaker that is still under development. The left speaker is performing to spec, with smooth response, but in the right speaker there is a problem with the gluing of the woofer cone to its elastic surround. Consequently, vibrations in the cone are not being absorbed properly by the surround, and this has produced a modest 2 to 3dB bump in the response around 1kHz—perhaps, of course, with a corresponding nonlinearity in the speaker's phase response. While this resonance causes a noticeable coloration of familiar vocals, and pulls centered images slightly to the right, it also destroys the soundstage. Sounds in the middle are muddled, and depth imaging is virtually nonexistent.

The overall frequency response of a loudspeaker may depart from flat response by up to 3dB without disastrous consequences; but if you want good imaging, the two speakers in a stereo pair must have the same response, matched to within 1dB and preferably better. If they're not matched, they can't produce a good stereo image. Because of this requirement, the stereo imaging of any company's loudspeakers depends not only on their design but also on the manufacturer's devotion to consistency on the production line.

For example, at Snell Acoustics the crossover network in every assembled speaker is individually fine-tuned until the system's frequency response matches a reference sample for that model, usually to within ½dB and often within ¼dB. This is accomplished by wiring small capacitors in parallel with larger ones and/or by removing a few turns from an inductor coil to fine-tune its value. (One coil in each crossover network is deliberately overwound in order to facilitate this adjustment.) The trimming corrects the inevitable variation in crossover network values and compensates for normal production tolerances in cone mass and suspension, compliance in the drivers. Not only are timbral colorations minimized by the consistently flat frequency response, but also the two speakers in any pair are sufficiently well matched for high-resolution soundstage imaging.

Some other speaker companies, but regretfully not a majority, are similarly devoted to precise pair-matching. Example: for many years KEF in England has measured large numbers

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1 Unfortunately, it’s a law of nature that the cheaper a pair of loudspeakers, the more likely it is that they will not be well-matched. And the cheaper they are, the less willing the dealer will be to let you audition pair after pair after pair.  

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Break On Through: The Life and Death of Jim Morrison
by James Riordan and Jerry Prochnicky

Riders on the Storm: My Life with Jim Morrison and The Doors
by John Densmore
319 pages, $19.95 hardcover. Published by Delacorte Press, 666 Fifth Avenue, New York, NY 10103.

With at least six books on Jim Morrison and The Doors now on the shelves, five published within the last year to take advantage of tie-in sales on the flowing, copious coattails of Oliver Stone's powerful film, The Doors, you'd think one of them, at least, might approach "very good," "excellent," even "definitive."

Not so. There have been no good books written about Jim Morrison and the band he fronted, and I'm beginning to wonder if there ever will be. It seems that those writers most attracted to such a task in the first place are just those writers least equipped—emotionally, historically, musically—to do their subject justice. Could it be that there's a place in rock writing for Albert Goldman after all?

Ultimately, after all the tales of Morrison's boozing, drugs, degradation, womanizing, and swift slide down into sodden alcoholism and desperate artistic flailing, there seems to be not a great deal to say about the entire Doors phenomenon—at least by those who have written about it so far. For these tales are as old as rock'n'roll itself: vague but blinding visions of an ecstatic state transcending poverty and middle-class stuffiness alike, with hopes that the liberating power whipping around a roadhouse stage—the power that tells musicians and audience alike that we're on the edge, that anything can happen, and it just might happen tonight—will somehow change things forever.

For the lucky (or unlucky) few, that power degrades into the powers of fame and money, in which what was once transcended nightly by music is now transcended more permanently by sales, marketing, investments, even as the door to the original fading vision, a door never actually passed through, is kept ajar by drugs and alcohol. Jerry Lee Lewis has lived on this edge for nearly 40 years. Bob Dylan continues to warp in and (mostly) out of it. For a brief time, Elvis embodied it all, even if he never thought about it in such terms. And for a slightly longer time, Jim Morrison—who certainly thought about it a great deal—was an avatar of a far darker version of the same dream.

Funny thing is, Jim Morrison's tragedy is revealed in these books, almost despite the authors' intentions. There's much loose talk of "shamanism," by Riordan, Densmore, and Morrison himself, but very little understanding of the shaman's role in the society of which he is an integral part. Morrison seems to have latched on early to a carefully selected, tiny handful of quotations—from Blake, Nietzsche, and Castañoeda—by which he then proceeded to systematically destroy first his body, then his mind, and finally his soul. He was hardly the first. His models were such early burn-outs as Verlaines, Rimbaud, and Dylan Thomas—the cheapest romantic clichés of the self-destructive poet, used as an excuse for getting drunk instead of writing for 150 years now.

In his early 20s, Jim Morrison had a dim, embryonic vision of alternate realities to be shared through religious, ritualistic proto-theater, with music the key ingredient. He wanted to, in Blake's words, "cleanse the doors of perception"—hence the group's name—so that "every thing would appear as it is, infinite." Of course, this is half of what life is about; Morrison forgot the rest, which is that, while we pursue the infinite, we are rooted in the finite, the limited, the body, duality; the awareness of the tension between life and death, the finite and the infinite, is what it is to be human. Morrison's furious drive to break on through whatever boundaries he saw with alcohol, music, and outrageous behavior eventually erected new boundaries built of these very tools. As far as anyone knows, these last boundaries remained invisible to him until the end, when death was the only door left open.

It's difficult to come down too hard on Doors drummer John Densmore's Riders on the Storm. The book is an extremely personal, if superficial, account of one simple, decent, frightened man's ride on the rock'n'roller-
coaster of the American '60s. With Morrison's long-time lover, Pamela Courson, dead just three years after Morrison himself, guitarist Robby Krieger's taciturnity, and keyboardist Ray Manzarek's almost desperate (and quite successful) Doors boosterism, is likely as close as we'll ever come to a clear vision of what it was like to live and work with Morrison. Written in the form of diary entries, letters to Morrison after his death, and page after page of brave if embarrassing gushing, Riders has "Writing Workshop" written all over it. Doing TM, reading Joseph Campbell, attending men's workshops with Robert Bly, Denimore worked on the book for years, for better or worse without a ghostwriter or an "as told to." But Riders remains little more than a good sit-down for a couple afternoon beers with a sincere, earnest, not very articulate musician attempting to come to terms with a long past period of his life that tortures him still. Densmore's remorse at his own cowardice in never confronting Morrison on the singer's self-destructiveness is painful to read, and very real; to judge the man's writing seems churlish. But, as with so many books about rock, after I finished it, I felt like reading a book.

Break On Through: The Life and Death of Jim Morrison, by James Riordan and researcher Jerry Prochnicky, was the wrong choice. This fat, seemingly well-researched study has all the wit, wisdom, perspective, and grace of a five-pound block of Velveeta. Riordan's third book, it's monochromatic in style, insufferably righteous in its increasingly defensive posture toward Morrison, snarled in hopelessly tangled non-sentences, full of errors of grammar and punctuation, and rife with malapropisms. Morrison goes through "rights" of passage, has a "pension" for self-destruction, is "waived" on the head by a bottle-swinging Janis Joplin, and is finally laid to rest in a Paris burial "sight." The sentences are filled with empty, dead words: "Their relationship...fluctuated dramatically on an almost moment-to-moment basis." Who needs those last seven words? Open the book at any page to find more examples than you ever wanted to read of how not to write well. William Morrow is a large, prestigious publishing firm; don't they employ copy editors any more?

But the story is there, the facts copious, and the mystery of Morrison's death finally revealed (he OD'd on Pam Courson's heroin). This is, without a doubt, the most thoroughly researched book on Morrison and the Doors yet to be published (though no one seems to have yet uncovered a photo of Morrison's mother), and reveals Danny Sugerman's No One Here Gets Out Alive for the puerile, fawning mess it is. (Denimore reveals that Sugerman and Ray Manzarek deleted large chunks of negative information about Morrison from No One Here; that's the only way Sugerman's book could be published.) All Break On Through seems to lack is writing.

But not even Prochnicky's ample legwork can be trusted. The one set of public-domain facts I was able to check proved infinitely malleable in an axe-grinder's hands. Riordan has nothing good to say about The Soft Parade, and Riordan's fourth album; I happen to like it quite a bit, and was surprised that he offers not a single favorable opinion from anyone else. More to the point, he states (p.337), "Incredibly short for a Doors album at only thirty-four minutes, The Soft Parade is undefined and, like the title says, soft." Besides the fact that Riordan should have written "as" instead of "like," The Soft Parade is actually longer by a minute, than its predecessor, Waiting for the Sun, and within seconds of the playing time of Strange Days, which Riordan praises as The Doors' best album with no complaints about its brevity. A small thing, an album's exact length, but if the man is so careless as to fudge data on such a trivial issue, I'd hesitate to take his word in larger matters.

Jim Morrison did not accept limits, and they eventually claimed him. No genius, he was a failed visionary, a boy who refused to become a man, a stranger to responsibility, and ultimately, a victim to his own unbridled appetites; he died little more than a pathetic, burned-out creep. But before that happened, he had a few good years of dark, ominous words and melodies that spun out with cold clarity, a musical immediacy that sounds as fresh today as it did a quarter century ago when it sent thrills of sex and death up the spines of a young audience who'd never heard the like. Yes, he was the Lizard King; what Denimore, Riordan, and Prochnicky make more than clear, while shedding remarkably little new light, is something we all knew anyway: that "I can do anything" was the shallow, desperate boast of a man already fallen off the edge on which he so loved to live. The tragedy of Jim Morrison—who, like all sacrifi-
cial media gods, will always be young; that's why we love to kill them, love to help them kill themselves—is that he destroyed himself in full view of millions, and no one did a thing to stop him. He never broke on through to the other side—he merely broke.

In the end, all that matters in a book is the writing, what Ezra Pound called “the quality of the affection.” John Densmore's Riders on the Storm contains much affection and little writing; Riordan's and Prochnicky's several pounds of publishing product has neither.

Meanwhile, the Doors mill of original albums, new videos, and recompilations grinds on—the Doors sell more records now than they ever did, and still to the same segment of the population: 15-to-21-year-olds. Perhaps the saddest thing is that Morrison's appeal might remain merely the bulge in his leather pants, the dry-humped mike stand, the lolling tongue—he who would be shaman-king relegated to being David Cassidy’s dark precursor. A sad and cautionary tale, and one that remains ill-told. Perhaps it’s better so—even after all this bad writing about a failed life, I still love The Doors.

—Richard Lehnert $
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MERIDIAN D6000
DIGITAL ACTIVE LOUDSPEAKER

Robert Harley


In this era of marketing hyperbole, audio consumers are faced with the word “digital!” appended to an ever-increasing number of products. From headphones labeled “digital ready” to blank cassettes blaring “DIGITAL!” in bold letters, we are inundated with that magic marketing word. (In fact, at a CES press conference in June, a BASF representative announced that the main advantage of Philips’s DCC over the analog cassette was having the “magic marketing word” in its name.)

This is an unfortunate trend; when digital technology is implemented in applications usually performed by analog techniques, the real digital innovation isn’t differentiated from the mere marketing labels.

One product that perhaps can lay claim to accurate use of the word “digital” in its name is the Meridian D6000 Digital Active Loudspeaker. The D6000 is much more than a loudspeaker with a built-in D/A converter and power amplifiers; the crossovers, acoustic compensation, volume control, and tone controls are all done in the digital domain using Digital Signal Processing (DSP) technology. In fact, both the amount and sophistication of digital processing found in the D6000 is unprecedented in loudspeaker design.

There should be no doubt, however, about the loudspeaker portion of the D6000: it uses conventional moving-coil drivers driven by an analog signal amplified by analog power amplifiers. In this sense, “digital” clearly doesn’t apply to the conversion of an electrical signal to an acoustic one. Such technology is still a long way off.

The D6000 represents a major advance over its predecessor, the D600 reviewed by JA nearly two years ago in Vol.12 No.11. Where the D600 accepted both analog and digital signals and had an analog line-level crossover, the D6000 accepts only digital inputs, and all functions are performed in the digital domain, with conversion to analog occurring just before the power amplifiers. The D6000 is also much more ambitious in its user interface, driver complement, and features. This is reflected in the substantial price difference between the two systems: $5490 vs $15,000.

I was quite impressed by the D6000’s sound at the January 1991 WCES (I named it one of the best sounds at the show), and was intrigued by its digital technology. Needless to say, when a pair was made available to Stereophile for review I jumped at the chance to spend some time with them in a familiar environment and with my favorite music.

**Physical and functional descriptions**

Although the D6000s stand 53" high, they are far less imposing than that dimension would suggest. They’re quite narrow, with the bulk of their volume hidden in their substantial depth. The D6000 is a two-piece system composed of a bass chamber that incorporates the electronics, woofers, and display, and a truncated triangular “head” housing the midrange and tweeter. Three spikes mounted on top of the bass chamber fit into corresponding metal...
sockets on the head. A pair of black grilles cover the D6000's sides, concealing the four woofers, which are mounted two per enclosure side. Four large carpet-piercing spikes couple the bass chamber to the floor.

The bass chamber's front and top panels are black glass, matching the head's gloss-black lacquer finish. A thin gold stripe runs vertically down one side, giving the impression of greater visual integration between the bass chamber and head. The D6000s' overall look is stunning; they exude elegance and grace no matter what the surrounding decor. In addition, their fit'n'finish is superb, especially the lacquer work. It is apparent that a lot of thought and effort has gone into making the D6000 visually appealing.

Toward the top of each glass front panel, a small rectangular display provides feedback to the user. Since the D6000 incorporates many features, yet has no knobs, switches, or other hardware to indicate operational conditions, this display is essential to its operation.

All interface between the user and the D6000 is through a large white infrared remote control. (The otherwise similar-looking 209 control for Meridian's 200 series components is black.) The remote will also work with other Meridian products, the D6000 controlling their operation through a wired communication port described later under "Technical details."

The D6000's feature-laden operation is evident from one look at the remote. Although it has 37 buttons, they are logically arranged and color-coded, making control of the D6000 seem like second nature after just a short time.

Six buttons in the top left corner select various inputs (CD, Tape 1 & 2, LP, Video, Radio) when used with one of Meridian's preamplifiers and 607 A/D converters.\(^1\) In systems without other Meridian products, the CD and Radio input-selector buttons switch between the D6000's #1 and #2 digital inputs. Six black buttons control a Meridian CD player or transport, providing rudimentary control (play, stop, pause, repeat, next, previous) but not scan forward/backward. The volume control is calibrated in 1dB steps, the D6000 displaying the level in dB between 0 and 99. A mute switch is provided beneath the two volume

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1 Meridian is about to release the 601 preamplifier with built-in A/D converter (and RIAA equalization in the digital domain), obviating the need for the 607 and separate preamp when used with the D6000.
controls. Directly adjacent, a numeric keypad allows direct access to particular CD tracks when used with Meridian CD players.

Where the D6000 really gets interesting, however, is in the six buttons on the remote’s center/right-hand side. These allow the user to invert absolute polarity, engage loudness compensation, adjust the bass level, change the system’s spectral tilt, compensate for different listening axes, and select a preset memory of bass and tilt-control settings. All these functions are performed in the digital domain, by performing mathematical functions on the digital data that represents the music signal.

When one of these buttons is pressed, the D6000’s display shows the current status of that particular function, allowing it to be changed during the few seconds it is displayed. If no new commands are received, the display reverts to its previous mode without changing the parameter. The D6000’s display mode can be changed from the remote. Normally, the display shows what source is selected and the volume level in dB. Pressing the “Display” button scrolls through the various modes, including CD track number, time elapsed for the track, and total elapsed time. One of the D6000s, called the “Slave,” always displays the source and volume level, while the “Master”’s display can be changed.

The bass and tilt controls are particularly useful: ±5dB of bass boost or cut below 200Hz in 0.5dB steps is available, and the overall spectral balance can be adjusted in 0.5dB steps over a ±10dB range, with a hinge point at 2kHz. After pushing the bass button, for example, the display shows the current setting, which can be changed by pressing the volume up/down buttons. After the desired setting has been reached, the display returns to its normal mode. The remote’s other controls work in the same way.

The balance control not only adjusts the level driving each loudspeaker, but also changes the time delay between them. This preserves a sense of soundstage, even for listening positions away from the center line between the loudspeakers, in effect by moving the physically nearer speaker farther away as an acoustic source.

Loudness compensation—a bass and treble boost at low volume to compensate for the ear’s reduced sensitivity to low and high frequencies at low sound pressure levels—can be engaged by the remote control. These types of bass/treble boost circuits have been anathema to high-end audio; they were crude, way overdone, and made no provision for varying the amount of compensation at different playback levels. (Preamplifiers with loudness circuits could never know the power amplifier’s input sensitivity, loudspeaker sensitivity, among other factors, and would never know the spl delivered to the room.) In addition, they added additional circuitry to the signal path, always cause for suspicion.

Meridian, however, has come up with sensible loudness compensation for the D6000. First, it is performed in the digital domain by the DSP chips, introducing none of the problems associated with additional analog circuitry. Second, the system adjusts the amount of compensation according to how loudly the system is playing, making the amount of boost appropriate for different volume levels. As playback level increases, the amount of boost is proportionally decreased, with no boost above 78dB spl even if the user tries to engage the loudness compensation.2 Finally, the bass and tilt-control settings are taken into account by the loudness compensation to achieve the correct amount of compensation regardless of the tone controls’ setting. Clearly, the D6000’s loudness compensation is light-years ahead of a “Loudness” button that adds nothing more than an unnatural sizzle/boom. Loudness compensation may be good in theory, but it has never been successfully realized until the D6000.3

To compensate for different listening height,

2 This is a good example of the benefits of having an audio system know the sound pressure level it is reproducing. With separate amplifiers, sources, and loudspeakers, there is no way for the system to determine the playback level.

3 During a recording engineering class I was teaching, I asked the students who left the loudness control on all the time or had their stereo’s bass and treble controls turned all the way up to raise their hands. Over sixty percent listened to music with this gross spectral distortion! And these were recording students!

I told them to listen with the bass and treble controls flat and with no loudness compensation for two weeks, then go back to the way they formerly had the tone controls just before coming to class so we could discuss their reactions. They all hated it when it their system was first set flat, but many discovered just how horrible the previous tonal balance had really been.

A few, however, couldn’t wait to get back to bass and treble controls all the way up and loudness on. I’m sure some of them are recording engineers by now, making equalization decisions on the records and CDs you see in stores. (Equalization decisions made, no less, on monitoring loudspeakers they themselves have chosen!) Scary, huh?

Right after this experiment, I assigned them to go to a high-end store and hear what neutral music playback was like. But that’s another story...
the D6000 provides three “axis” settings. These adjustments change the amount of delay between the midrange driver and tweeter, maintaining constant arrival times from the various drivers regardless of the listening height. The default setting of “1” corresponds to the normal listening axis on a couch or chair.

Activating the previously mentioned bass, tilt, polarity, and axis controls momentarily replaces the existing display on both D6000s. In a nice touch, the loudness compensation and absolute polarity status are continuously displayed as dots (or lack of) in the source/volume level display. For example, “CD. 78” means CD source, 78dB, positive polarity (presence of first dot), and loudness compensation off (absence of dot after the volume number).

Finally, the D6000 can be put in “Standby” mode, keeping the circuitry warmed up for best performance at all times. The Standby mode turns off the display and reduces the bias to the power amplifiers.

How does all this translate to the D6000’s practicality and ease of use when playing music? In a word, the D6000 was fantastic. In fact, I can’t say enough about the user interface and features. The D6000 was a joy to use, with carefully thought-out operation and useful—no, addictive—features. The D6000s were easy to operate from the first, putting the user in complete control. More on this later.

Before we get to how the D6000s performed in the listening room, I hope you’ll bear with me through the techno-nerd stuff; the D6000 is really quite an amazing piece of engineering and deserves a full description. I suspect that the D6000 will one day be regarded as the progenitor of the digitally based loudspeaker genre.

**Technical details**

Let’s start with what makes the D6000 unique: its digital functions. As I mentioned, the crossovers, tone controls, volume control, loudness compensation, and acoustic response shaping are all done by manipulating ones and zeros in Digital Signal Processing (DSP) chips rather than with resistors, capacitors, potentiometers, inductors, or other analog components.

The D6000’s digital heart and brain are two Motorola 56001 DSP chips. These are the same devices used in Theta and Krell digital processors (used there strictly as low-pass signal reconstruction filters) and many professional digital audio editing systems. They can perform a variety of functions, determined by the list of instructions given them (the software). These instructions are stored on an Erasable Programmable Read-Only Memory (EPROM) chip, making software changes as easy as replacing a socketed chip. This is the beauty of software-controlled systems: upgrades and improvements are easily and inexpensively accomplished in the field, sometimes by the user. The D6000 provides a port on the rear panel for accessing the EPROM for software changes. One EPROM contains the code for both the DSPs as well as for the microprocessor that controls the whole system.

Because the D6000’s crossover is implemented in the DSP chips and software, the slopes and phase characteristics can be whatever the designer wants, rather than being limited by what is possible with passive analog components. Changing crossover slopes and frequency is a matter of changing a few lines of the DSP code. The D6000 uses very steep (sixth-order) slopes that are phase coherent—unheard of with analog filters. In addition, the entire system is equalized with the DSPs to provide flat on-axis response and a more extended LF.

The low-pass section uses an Infinite Impulse Response (IIR) filter, and the bandpass and high-pass sections use Finite Impulse Response (FIR) filters. Crossover frequencies are 200Hz low-pass to the woofers and 2.6kHz high-pass to the tweeter. The crossovers also include driver sensitivity compensation (stored in the EPROM) so that each loudspeaker matches the prototype in frequency response by ±0.5dB. This also allows the system to be recalibrated after a driver is replaced. A delay system time-aligns the acoustic output from the drivers.

The three filtered digital signals from the DSPs (low-pass, bandpass, and high-pass) drive three DA converters, which in turn drive the power amplifiers and loudspeakers.

The DA converters that operate on the midrange and tweeter signals are identical to those in Meridian’s 606 stand-alone processor, a Philips 7350 Bitstream DAC used in Meridian’s “dual differential” mode. As each channel of the two-channel 7350 has differential outputs,

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4 You may one day regale your children with wild stories of the days when crossovers were made from capacitors and inductors rather than FIR filters in DSP chips controlled by EPROMs.
the two channels of just one 7350 chip can be used for mid- and treble frequencies rather than left and right channels as in the 606. The benefits of using DACs in dual-differential mode are reportedly a 4.5dB reduction of noise, a 6dB reduction of distortion, and better low-level linearity. Unusually, an earlier Philips 7321 Bitstream DAC chip is used here for the digital filter. Many designers looked forward to later generations of Bitstream chips that would allow the integral digital filter to be bypassed; Meridian, however, believes the 7321 to be the filter of choice.

The D/A converter handling the low-frequency signals is nearly identical to that in the Meridian 203 D/A converter, a 7321 Bitstream chip with the same passive pre-filtering and unbalancing circuit found in that highly regarded stand-alone unit. The dual-differential design is again employed, but since the signal is mono, only one 7321 per loudspeaker is needed. The 7321 is driven by a differential signal from the DSPs. All de-emphasis is performed in the analog domain with an RC network.

In addition, the S/PDIF receiver circuit is based on the Philips 7274 chip, but implemented with the same proprietary jitter-reduction techniques found in the 203. As in Meridian's outboard converters, the digital PCB is a four-layer design.

After the three separate signals are converted to analog, the loudspeakers are driven by four power amplifiers, each with a power rating of 65W. Two amplifiers drive the woofers, and one each powers the midrange and tweeter. Each amplifier's output stage consists of a complementary pair of Motorola 15003/15004 transistors in TO-3 packages, bolted to the metal rear panel for heatsinking. The circuit is quasi-class-A (Meridian calls it class-AA), meaning they're kept partially turned on all the time, but with a low bias current.

The D6000's driver complement includes four long-throw 8" doped-paper woofers sourced from SEAS. Two are mounted on each side of the bass enclosure to reduce excitation of the cabinet walls and fire out to the side rather than forward. (This is inconsequential as the speaker's radiation pattern is omnidirectional in the woofer's passband.) The midrange is a 6½" polypropylene-cone unit also sourced from SEAS, but custom-made to Meridian's specifications. The 1" aluminum-dome tweeter features a silver voice-coil and bears the Boothroyd/Stuart name on its front plate.

The midrange/tweeter heads are made from 1"-thick plywood, covered by black lacquer. The asymmetrical shape and rounded corners reportedly reduce resonances and diffraction respectively. The bass chambers are ¾" particleboard, with extensive bracing. A four-pin XLR plug on a short cable attached to the bass chamber connects the head to the system.

All the electronics are mounted on a rear metal panel which fits into a recess in the bass chamber. The power supply is attached to a separate plate at the bottom, and features two large toroidal transformers.

The rear plate also holds the input and output connections, with several connection choices available. With no other Meridian components in the system, the D6000 will accept two digital inputs (S/PDIF) on RCA jacks or Toslink optical jacks. When used with a Meridian CD transport, player, or preamplifier, the D6000 gets its digital input on a DIN jack, allowing bidirectional communication between the D6000 and transport. (This is how the D6000’s remote controls the transport or player functions.) This communication port is duplicated with Toslink optical jacks, giving the user the choice between electrical and optical connection. With the optical jacks, no electrical connection is made between the D6000 and source components. In either case, the D6000 receives and understands the subcode embedded in the S/PDIF signal, allowing the D6000 to display track number, track time, and other subcode information.

Finally, the "Slave" D6000 gets its digital input from the "Master" D6000 via a single Meridian DIN cable or through two Toslink connections. (Optical communication is unidirectional, requiring two connections to transmit and receive data.)

Listening
Assessing the D6000's musical performance necessitated using other Meridian products in my system. Because the D6000 has only digital inputs, my phono output had to be digitized (after RIAA equalization and gain). This was accomplished by feeding the output of an Audio Research SP-11 Mk.II, used as a phono preamp, into Meridian's 607 A/D converter. The analog front end was a Well-Tempered Turntable fitted with an AudioQuest AQ7000 car-
tridge and stepped up with the Expressive Technologies SU-1 step-up transformer. All phono cables were Expressive Technologies IC-1, and the SP-11 to 607 A/D converter was through AudioQuest Diamond Interconnect.

The Meridian 607 A/D accepts analog input from two sources and outputs an S/PDIF digital signal that drives the D6000's second digital input. A Meridian 602 transport (reviewed by JA in June, Vol.14 No.6) fed the D6000's primary digital input via a Meridian DIN cable, allowing me to control the system from the D6000's remote and assess its functionality as a system.

I must say that I find the idea of digitizing a perfectly good phono signal abhorrent, especially if the LP signal had never been in the digital domain during the recording or mixing process. To me, pure analog still offers the highest level of musical involvement and satisfaction. I'm not opposed to digital—in fact, I applaud efforts like the D6000—but I have a hard time inserting an A/D and D/A converter in my phono chain.

This will be a moot point, however, to many potential D6000 purchasers. The growth in the number of CD-only systems is evinced by the success of products like the Audio Research LS1 line-stage preamplifier and other preamps sans phono stages. If the signal has already paid the admission price of digital at the A/D converter, it makes sense to perform as much of the necessary processing as possible in the digital domain. But having to digitize your phono signal is an unfortunate casualty in the march of progress.

The D6000s were positioned 44" from the rear wall and 34" from the side walls (all dimensions to center of cabinet), pointing straight ahead. This positioning provided solid center-channel images, while minimizing the excitation of room modes. (The distance from the walls was suggested by Snell Acoustics' room analysis computer program.) The vertical listening axis placed my ears a full 14" below the tweeter axis, an unusual situation that would be cause for concern if the D6000 were not designed for this situation.

Just after setting up the D6000, something unusual happened that was to be a foreshadowing of the listening impressions. I had just finished reviews of other products and took down the Hales System Two Signatures/Muse Model 18 satellite/subwoofer combination, replacing them with the D6000. I put on some music to clean the listening room by (and break in the D6000s): Larry Carlton's Last Nite (MCA MCAD-5866), a live album recorded at the Baked Potato. I was wrestling with cables in the closet behind the listening seat when I heard the most lifelike sounds and ambience I'd ever heard from this recording. The feeling of being in the club was palpable. Tiny nuances—the musicians talking, sounds from the audience—were clearly audible. Throughout the listening, this impression of presence and life kept returning, especially on live recordings. More on this later.

Apart from this feeling of low-level resolution and clarity, my first impressions were that the D6000 was very neutral, smooth, and well-balanced. (These notes were taken with the loudness compensation off, the bass and tilt controls set to flat, and CD source.) There was a "bigness" to the presentation, accompanied by a sense of power, authority, and weight. There was also a clarity through the upper midrange and treble that was particularly appealing. The music was open, free from congestion, and sparkling with life. The treble, in particular, was delicate and natural. There was no hint of the hashy brightness or glare so many loudspeakers add to the music. Cymbals retained their delicacy without sounding overlaid with white noise. Violins had a natural, rather than screechy, rendering. The D6000's exceptionally smooth treble made long listening sessions—even with CD—possible and enjoyable.

What I really found impressive about the D6000 was its ability to reveal fine detail and nuance without sounding etched or forward. There is a very delicate balance between resolving musical detail with its transient character intact, and a presentation that is aggressive, unsubtle, hyped, and annoying. This latter character often reveals "detail," but at the expense of an unnatural musical rendering and the rapid onset of listener fatigue. The D6000 successfully walked the fine line between presenting real musical detail and over-etching. The presentation was simultaneously exciting and laid-back—often mutually exclusive qualities.

Similarly impressive was the D6000's abil-

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5 When LA session musicians get tired of overdubbing parts and never playing with other musicians, they form super-bands that work out just for fun at the Baked Potato. If you live in LA, check out this club (it's directly across from Universal Studios).
ility to resolve many gradations of detail and nuance. The contrast between the salient and subtle musical elements was astonishingly wide, conveying a sense of realism and life. High-level transients were reproduced with razor-sharp edges that seemed to jump out of the presentation, yet reverberation and other low-level nuances were soft and gentle.

The D6000's ability to render fine detail really revealed itself on live recordings. From Clark Terry Live at the Village Gate (Chesky JD49), Jazz at the Pawnshop (Proprius PRCD-7778), The Monty Alexander Trio Live at the Montreux Jazz Festival (MPS/PolyGram 817487-2), to the previously mentioned Larry Carlton live album, the D6000 had an uncanny ability to transport the listener to the recording site. Through all these recordings ran a common thread: all had a palpability and sense of presence not heard through other loudspeakers I've had in my listening room. Everything from the applause to the clinking of glasses contributed to the impression of "being there." I don't know what other quality of the D6000 accounts for this characteristic besides low-level resolution, but it was very enjoyable musically, creating a sense of excitement similar to that experienced at live shows.

I was also taken with the D6000s' clarity and transparency, especially in the midrange. They provided a clear picture window on the music, with no sense of haze. The presentation was open, crystal clear, and remarkably transparent. This allowed the instruments to exist individually in space, without a sense of congestion. The D6000s also provided a clear view into the rear of the soundstage, with a great sense of distance between instruments and surrounding reverberation. Soundstage width was similarly impressive, with images appearing beyond the loudspeaker boundaries. Image outlines were well-defined, providing a sense of individual instruments rather than a synthetic continuum. This is a vital component of correctly reproduced music, and the D6000s excelled in this area.

The D6000s were also superb at revealing an instrument's tonal shadings. Acoustic piano, for example, was reproduced with a lifelike realism rarely heard from loudspeakers. Jazz and classical piano were equally served by the D6000s: Herbie Hancock on his new retrospective CD on Columbia, the aforementioned Monty Alexander disc, Dick Hyman Plays Fats Waller, and Stereophile's Intermezzo all had a freedom from coloration that allowed the instrument's characters to emerge. Finely woven instrumental textures were resolved with clarity and delicacy, accurately portraying the instruments' subtle tonal nuances. The presentation was the antithesis of flat sterility and synthetic textural renderings.

There is one area, however, where I felt the D6000 departed from tonal neutrality and interfered somewhat with the listening experience: the bass. Low-frequency reproduction was on the fat side, without the agility and precision to which I'm accustomed on the Hales/Muse combination. In addition, the amount of bass was slightly out of proportion to the rest of the spectrum, giving the presentation an overly weighty character. Plucked acoustic bass had a big, round character that nicely conveyed the instrument's size and body, but it had a tendency to become overbearing on many recordings.

**Tone controls to the rescue!**

A few pushes on the remote control brought the bass level more in line, taking away the trace of tubbiness. Throughout the auditioning, I found myself using 1 to 2dB of bass attenuation on most recordings. This was just enough to remove the hint of bloat that could distract from the music. The D6000 still didn't have the precision of pitch definition of the Hales, but I found the warmth, weight, and roundness very pleasant on many recordings. In addition, the D6000's bass extension was superb by any measure, providing a rock-solid musical foundation. Kickdrum was powerful and dynamic, and sustained low frequencies were effortless. Jean Guillou's organ transcription of Musorgsky's Pictures at an Exhibition (Dorian DOR-90117) had a power and depth exceeded only by the extraordinary Muse Model 18 subwoofer.

Speaking of tone controls, the bass and tilt adjustments were very useful. A particular CD a little bright? Take the edge off with 1 or 2dB attenuation with the tilt control. Disks that had been annoyingly bright—Eric Johnson's Ab Via Musicon (Capitol CDP 7-90517-2), for example—became listenable again. Bass a little buried in the mix? Bring it up with a few button pushes. This was a great luxury and one that I will miss; many recordings can benefit from a slight adjustment in tonal balance.
These comments were with CD source; my impressions of the phono front end digitized
with the 607 A/D are somewhat less enthusiastic. There was a general loss of air and palpability—fundamental characteristics of good analog. The presentation became a little flatter and less involving than I remember these records with my reference system. The acoustic guitar on the Philadelphia Jerry Ricks LP *Empty Bottle Blues* (Radioton SLP 37082), for example, lost the edge of realism, bite, and air heard from the undigitized LP.

In addition, there seemed to be a slight treble loss with LP playback, although the 607 measured as having no high-frequency rolloff. I ended up using the tilt control to boost the top end with LPs, and reducing the top end with the CD source. Instruments rich in high frequencies—Stephane Grappelli’s violin on the live album with David Grisman (Warner Brothers BSK 3550)—seemed to lose some of their sheen and life. The presentation was just less involving with familiar LPs.

I found that absolute polarity was much more audible with LPs than CDs. Finding the correct polarity of a record reduced the suggestion of a top-end rolloff slightly, giving the presentation a greater sense of openness and clarity. Interestingly, records with which I was marginally familiar sounded just fine, but records I knew intimately tended to be disappointing. The degradation, however, was far less than I would have expected, rather than greater. I suspect that the 607 is a respectable A/D converter.

One minor problem has been corrected in the production run: the thermal protection circuit that shuts down the amplifiers tripped too soon. With a fairly high ambient temperature and a few hours’ hard use, the D6000s would protect themselves by turning off. Meridian has corrected this problem, and all units in the field represent later production. Incidentally, the review samples are serial numbers 1 and 2, pre-production units brought to Santa Fe directly from the 1991 Las Vegas CES.

**Measurements**

Because the D6000 accepts only digital inputs, measuring them was a little trickier than testing a normal loudspeaker. The Maximum Length Sequence signal produced by the MLSSA hardware is analog, requiring conversion to digital to drive the D6000. The Meridian 607 A/D was used, meaning that the 607’s characteristics will be superimposed on the loudspeaker’s response. To remove the 607’s contribution, an impulse response was taken of the 607 A/D and 203 D/A combination—we assumed that the 203’s decoding would be basically similar to that in the D6000—and transformed it to the frequency domain. The MLSSA’s “Reference” function allowed this frequency response to be subtracted during post-processing from all measured frequency responses of the D6000 (just as we normally use it to subtract the MLSSA’s anti-aliasing filter’s audio-band fluctuations from any loudspeaker’s frequency response).

Fig.1 shows the D6000’s impulse response taken on the listening axis (38" above the floor). If this looks unusual for a loudspeaker, it’s because the 607’s ADC and the D6000’s D/A converters and digital filters are in the signal path. (MLSSA can’t subtract time-domain effects.) The ringing on either side of the impulse is a characteristic of the digital filters used in the D6000’s Bitstream chips. (The build-up of energy just before the impulse proper can only be attributed to the digital filter—unless we live in an acausal universe in which events precede their causes!) Disregarding this effect, the impulse overall looks very similar to a two-way using a second-order crossover with the tweeter wired out of phase. Since there was no need to wire drivers in this manner because the DSP crossover filters allow any combination of amplitude rolloff, phase response, and driver polarity, I am at a loss to account for this impulse shape. For interest’s sake, the positive-going nature of the impulse response of one of the woofers is shown in fig.2.

Moving from the time domain to the frequency domain, we can see from the right of fig.3 that the overall response on the listening axis 38” from the floor is commendably flat. This curve is an average of those taken across a ± 15° horizontal window on this axis and is perhaps the best indicator of the system’s overall balance. There is a very slight depression in the 1kHz–6kHz region which may be expected to give a slightly less immediate presentation, but this was not noted during the auditioning. A marginal rise above 15kHz can also be seen, but, again, was not heard during the auditioning. The nearfield woofer response, transformed from the impulse response in fig.2, is shown on the left-hand side of fig.3, with its
relative level approximated. The bass is well-extended, appearing to be down 3dB at 30Hz. Finally, the steep drop above 20kHz is not the loudspeaker's high-frequency limit but the result of the digital low-pass filtering employed in the speaker's D/A conversion.

The D6000 has excellent high-frequency dispersion, seen in the family of lateral off-axis plots of fig.4. The curves are normalized to the on-axis response and are taken (from top to bottom) at 30° off-axis on the "slanted" side, 15° off-axis, the on-axis response, and 15° and 30° off-axis in the other direction, on the "vertical" side. The flattest curves are those at 15° off-axis on the "vertical" side of the enclosure, the approximate listening position with the D6000 pointed straight ahead. This is the position I found to give the best sound. These curves are notable in that the response, especially the treble, remains flat even very far off-axis. Many loudspeaker designers consider this characteristic essential to uniform power response at the listener position and to good imaging. Colorations in the off-axis output

![Figure 1](image1.png)

**Fig.1** Meridian D6000, impulse response on listening axis at 2m (5ms time window, 30kHz bandwidth)

![Figure 2](image2.png)

**Fig.2** Meridian D6000, nearfield woofer impulse response (130ms time window, 1kHz bandwidth)

![Figure 3](image3.png)

**Fig.3** Meridian D6000, anechoic response on listening axis at 2m averaged across 30° horizontal window (with mic response subtracted), and nearfield response of woofer

![Figure 4](image4.png)

**Fig.4** Meridian D6000, horizontal response family at 2m, from back to front: anechoic response 30° to slanted edge of mid/treble enclosure; 15° to slanted edge; reference response on listening axis; 15° to vertical edge of mid/treble enclosure; 30° to vertical edge

![Figure 5](image5.png)

**Fig.5** Meridian D6000, cumulative spectral-decay plot
result in colorations in sidewall reflections, a significant component of the sound at the listening position. There is also a general belief that a depressed off-axis treble response results in a reduced sense of air and space—see JA's "Follow-Up" review of the Quad ESL-63 US Monitor in Vol.12 No.6, for example. Some designs—the Snell models, for example—make flat off-axis response a high design priority. The D6000 had one of the flattest off-axis responses measured, perhaps correlating with the sense of size and air noted, along with a very low level of coloration.

Vertically, there was also very little change in treble balance, meaning that listener height will not be particularly critical, even without the D6000's capability of tilting the preferred axis with the remote control. Comparing the response on the high tweeter axis with that used to derive fig.3, there is a very slight trend toward increasing energy as frequency increases, but this is marginal: Loudspeakers are rarely this flat.

The waterfall plot (fig.5) shows a very clean and sudden decay, with minor ridges at 2.4kHz and 3.8kHz. The dark ridge just below 20kHz (actually 15,750Hz) is the computer monitor's scanning frequency. The treble, in particular, decays very cleanly, with the after-the-event resonant energy kept at a low level.

Overall, the D6000 measured as I would have expected from its sound: flat response, good high-frequency dispersion, and excellent bass extension.

Conclusion

The Meridian D6000 is a superb product, both in its innovative technology and in the musical results of that technology. It combines elegant styling, an addictive user interface, and an extraordinary ability to involve the listener in the musical experience.

On the positive side of the musical ledger, the D6000 is exceptionally smooth, well-balanced, and free from coloration. The mid-band is particularly pure and transparent, providing a clear, picture-window view on the music. Treble is reproduced with delicacy, air, and liveliness, yet is never strident or brittle. The D6000's treble smoothness results in long listening sessions remarkably free from fatigue. I also enjoyed the D6000's bass extension and sense of weight and authority.

The D6000's dynamic contrast and ability to resolve fine gradations of inner detail deserve special mention. The presentation is infused with a wealth of musical detail, captivating my attention. This rare quality adds immensely to their presentation and pushes the D6000s over the line, from mere good sound to providing a truly involving musical experience.

I must also reiterate my praise for the D6000's exceptional user interface. It provided the necessary visual feedback, and was easy and a joy to use. The ability to change the tonal balance (with very sensible adjustments), absolute polarity, and volume from the listening chair was a luxury I will miss when the D6000s are returned.

My criticisms of the D6000 are minor in comparison to their strengths. I found the mid-and upper bass a bit fat, loose, and overly prominent rather than tight, agile, and subtle. Low-frequency pitch resolution and articulation, while good, didn't match the reference Hales System Two Signatures/Muse Model 18 combination. By using the D6000's bass control, however, I was able to mitigate the D6000's slightly bass-heavy rendering.

There is no doubt that the D6000s are stunning with CD source. I was somewhat less impressed, however, with their performance with a digitized analog front end. The D6000 therefore gets a much more enthusiastic recommendation for primarily (or exclusively) CD-based systems than for die-hard analog fans with large LP collections.

Similarly, the D6000 is easier to recommend to certain music lovers than others. Some will value its "all-in-one" simplicity, visual elegance, and remote control, while others will prefer the upgrade flexibility offered by separate components. There is a large group of music lovers—music lovers not properly addressed by the high end—to whom the ideas of tube monoblocks on the floor and cables the thickness of a garden hose are unacceptable. For those audiophiles, the D6000 is unsurpassed.

The D6000's not-insignificant $15,000 price tag must be addressed: A $15,000 budget will go a long way toward building a high-end system. For comparable money, one can assemble the Hales System Two loudspeakers, a Muse Model 18 subwoofer, a Theta or Wadia D/A, a line preamp such as the Krell KSL or Audio Research LS-1, a pair of monoblocks such as the Muse Model 150s, the VTL Compact 100s,
Quicksilvers, B&K M-200s, or Adcom GFA-565s, and still have between $500 and $1500 left for cables (more if a passive control unit replaces a preamp). Again, the choice of which approach one prefers— flexibility, or elegance and convenience—is a personal decision. One music lover's preference may be another's anathema.

The bottom line is that I enjoyed my time with the Meridian D6000s. They were consistently and unfailingly musical, producing one of the best sounds I've had in my listening room. This musicality, combined with their elegant appearance and superb user interface, has earned them an enthusiastic recommendation.

PROAC RESPONSE THREE LOUDSPEAKER

Jack English


Let's see—should I start with a discussion of conflict? Or maybe indecision? No, let's be more psychological and talk about approach/avoidance dilemmas... No, I'm supposed to be entertaining. How about a joke? Nah, that won't do. Well how about the framework for a joke? Yeah, that's the ticket!

Did you hear the one about the audiophile looking for speakers? Well, it seems he had a dilemma. On the one hand, he (it's a he, isn't it?) was obsessed with audio quality. He searched out (and was very impressed with) the Wilson WATT/Puppy/WHOW setup (about $23,000). He really liked the Avalon Ascents (they had been raved about in The Absolute Sound—they were $16,500 or so depending upon the finish, the state of the dollar, and the quality of the most recent review, it seemed). On the other hand, he had a family to support. Wasn't this an ungodly amount of money to spend for speakers? If only they cost $5000 or so... How could he ever get the level of performance he coveted while spending an amount of money he could justify?

But he had listened to all of the $5000 speakers, hadn't he? Let's see now, there were the Merlin Signature Fours, the Snell Type A/III Improved, the ProAc Studio Towers, B&W 801 Matrix Series II, Mirage M-1s, Quad US Monitors, Martin-Logan CLS IIs with subwoofers, and many other very worthy contenders. But none of them seemed just right, as Goldilocks might have said. Back to the big bucks—the Infinity Betas and Thiel CS5s. "Too much money!"

groaned his conscience. Where, oh where, was he to turn? Speakers either cost too much or had shortcomings, however minor, that galled him at this price level. Shouldn't more expensive products sound more alike? Shouldn't they be converging on a more realistic—and similar—sound? Why, oh why, did they all sound so different? And why did they all have to cost so much?

The Wimp Factor

J. Gordon Holt has argued loud and long over the necessity of listening to recordings of live performances of unamplified music. In essence, this leaves us with classical performances, typically of orchestras to fully test an audio system's sonic capabilities. Harry Pearson has gone so far as to name his magazine based upon this fundamental principle. And with good reason. Yes, all halls are different and all recordings are different, but there's a fundamental truth in the sound of a violin or an oboe. After all, what is the natural sound of a synthesizer? A large part of my psyche agrees with this argument. How can you comment on the soundstaging of a multi-track popular recording when the performers never performed in the same space and probably didn't even perform at the same time? Yeah, it had to be live, unamplified orchestral music. If something could get that right, it could get anything right.

(But, on the other hand,) Bull! Tony Cordesman was right. Just because something can recreate a string quartet realistically doesn't guar-
antee squat when it comes to Metallica! Rock-'n'roll is the predominant musical form, outselling classical by a margin of 30 to 1. Shouldn't a good audio system be able to play rock (to play loud and to play deep bass)? Of course it should. Quite frankly, many "audiophile" systems can't do it. Period. They wimp out. They can't recreate the intended visceral impact the musicians heard on those old JBLs in the studio. If a speaker is going to be able to play whatever I want to listen to, it better be able to play rock. Speakers with little bass and constricted dynamics simply won't do. I don't (oops—that is, he doesn't—back to the story line) want to live with nice, musical, euphonic speakers. He wants speakers that can handle whatever he feels like throwing at them. Some nights it might be the Emerson String Quartet, but on other evenings it might be Axel Rose.

So, mimicking Goldilocks, he continued the search. Naw, this one has no bass. No, this one has a flat soundstage. Nah, this one lacks dynamics. Nope, this is too bright. And so it went.

**ProAc speakers & Stuart Tyler**

With very few exceptions (eg, the Mini-Towers and Extended Bass Tablette or EBT), I have very much enjoyed all of the ProAc products. Of particular note is the Response Two (especially on the R2 Target stands imported by May Audio Marketing). The only valid criticism of the Response Two is its lack of truly extended deep-bass response. It's a little box, after all, and even Tyler has been unable to rewrite the laws of physics. All of which brings us to the latest ProAc speaker—the Response Three.

If nothing else, Tyler is predictable. By adding a second midrange/woofer driver he created the EBT (from the Tablette), the Super Tower (from the Studio One), the Mini-Tower (from the Super Tablette), and now the Response Three (from the Response Two). Such a strategy has been a hit-and-miss proposition for ProAc. The underlying concept seems simple enough: two smallish drivers should be able to reach deeper into the bass yet still be fast enough to handle the midrange. In this case, the midrange/woofer drivers are 6½" polypropylene-coned units from Scanspeak.

Tyler consistently relies on a few other predictable approaches. For one, better bass can be achieved out of a bigger box. The Response Threes adhere to this rule as well, being largish, floorstanding cabinets with front-firing ports. And, as most of you should know by now, ProAc firmly believes in mass. They apply mass-loading in two ways for most of their speakers, the Response Three being no exception. First, spikes come with the speakers. Second, sand (or lead shot, or whatever) can be added into small compartments located at the bottom rear of the cabinets. The Threes use the loading material to actually "tune" the bass. Too much material and the sound becomes dull and lifeless; too
little and, besides losing the benefits of mass loading in the first place, the sound lacks articulation and becomes slightly boomy—the Threes' sound character prior to loading.

Like some of the smaller ProAc designs, there are painted straws in the front-firing ports. Unlike the sound of the ProAc Studio Towers or B&W 801 Matrix Series III, the ports on the Threes are not audibly distracting. Since they're already "stuffed," there's no motivation to play with them. They work as intended and should be left alone. While on the subject of leaving things alone, though there are grille cloths, there are no protective covers over any of the drivers in the Threes (unlike many other ProAcs). This is clearly beneficial. Protective covers invariably impact a driver's performance; designers should leave them off. In addition to playing a role in convincing Tyler to do away with protective covers, I'm equally pleased to report that the Threes can be either bi-amped or bi-wired. (See? Prodding by reviewers does work!)

Doubling up on the midrange/woofer drivers has many other advantages. For starters, a two-way crossover can be used. No matter what else we've learned along the way, simpler is often better. It should be easier to get a better sound out of a two-way crossover than a three- (or more) way. A three-driver, two-way speaker also lends itself to what I've called the co-centric center layout (more appropriately described as the D'Appolitto configuration). The intent is to create a vertical array of drivers with overlapping sonic centers. Such arrays (as found on Hales, Merlins, Dunjects, and others) are invariably stacked vertically in a straight line. Tyler, as is his wont, breaks the mold here as well. Though the drivers are in a line, this is not vertical, being tilted inward so the topmost driver is toward the inside of the cabinet while the bottommost driver is toward the outside of the cabinet. This also means the Response Threes come in mirror-imaged pairs.

By tilting the driver alignment, the cabinets have to be made wider than would otherwise be the case. ProAcs have historically had stunning soundstaging and imaging capabilities, and I've been one of many reviewers who assumed this was achieved partly by Tyler's obsession with narrow cabinets (often just barely wider than the driver surrounds). A tilted arrangement means a bigger box for better bass—but it also means a wider cabinet. The question, to be answered later, concerns the trade-offs inherent in this decision between bass response and soundstaging precision.

So the Response Threes seem simple—a two-way, pseudo-D'Appolito arrangement in a floorstanding, ported box using spikes and sand. Not much new ground here. But, of course, there's more. The Threes come with a "plinth." This is nothing more than a thick slab, just slightly wider and deeper than the speaker cabinets, bolting onto the bottom of the speaker cabinet. The spikes actually go into the plinth instead of the cabinet itself. You have to use the plinth in order to use the supplied spikes. An alternative would be to simply use Tiptoes or Tone Cones (I've grown most happy with the Goldmund cones for these purposes). Use of the plinth does change speaker height slightly, which may impact bass performance somewhat as well as alter the relationship between the height of the drivers and your ears at the listening position. Since plinths and spikes are supplied with the speakers, I used them.

Finally, I still find the odd-shaped grille covers rather displeasing. If you dislike the look of the grilles, buy the speakers in black—the grilles are virtually invisible. If I didn't say something negative here, I doubt I'd have anything negative to say anywhere in this review. These are incredible speakers, and a dramatic improvement over the similarly priced Studio Towers.

**Sound**

Splendid! Stunning! Gorgeous! Breathtaking! Whew—these are killers—KILLERS—K-I-L-L-E-R-S!!!

What more is there to say? I've been more impressed with the ProAc Response Threes than I've been with any—any—speaker I've ever auditioned!

Right out of the double-boxed packaging (without sand, plinths, or spikes), the Response Threes are wonderful. They required the least break-in time of any ProAc I've been exposed to. Even without sand, plinths, and spikes, these are very special speakers. Bass, from the bottom through the midbass and up into the lower midrange, is a bit fat, with a very slight lack of articulation. Soundstaging, while very stable and three-dimensional, lacks pinpoint precision. I only mention these two very minor quirbles now because they are ameliorated by the inclusion of sand, plinths, and spikes. Like every other ProAc, the Threes must be located
well away from the rear and side walls to work their magic.

• **Bass:** The low end of the Threes (once they are properly loaded with sand) is extended, controlled, and powerful. I never expected this quantity and quality of bass out of a two-way speaker. On something relatively simple, like Rufus Reid's acoustic bass on *Excursions In Blue* (an outstanding recording, made with the Colossus processor, on Quartet Q-1005), every note is clear, fast, rich, and precise. Subtle gradations in volume are recreated with aplomb. Nuances, such as fingering and plucking techniques, are admirably real. On more complex material, such as the whimsical crescendos of Dukas's *The Sorcerer's Apprentice* (Soliti and the Israel Philharmonic Orchestra, London STS 15005, LP), the double basses are dynamic, clear, and powerful. It becomes all too easy to visualize that enchanted broom wreaking havoc as the overmatched apprentice grapples with a dilemma of his own making. On a powerhouse rock recording such as Queen's "The Invisible Man" (*The Miracle*, Capitol C11H-92357), the bass is startlingly visceral, the dance beat unavoidable. In short, the character of bass in the recording is exactly what you'll get. No matter how many rationalizations we come up with, speakers that can't reproduce bass with authority are robbing the music of much of its emotion.

• **Midrange:** Full, rich, lush, musical, involving—in short, lifelike. The midrange suffers not a whit from the bass load on those smallish, doubled-up drivers. The unique sonic signature of every instrument, a result of its own unique mixture of fundamentals and overtones, is simply right (listen to the naturalness of the oboe, the blat of the brass, the plucked strings from *The Sorcerer's Apprentice*). Or try the richness of voice—the mix of chest and throat, the amount of nasality, are spot on. There's nary a trace of any textural coloration, and never a barrier between you and the performers. The crossover point doesn't seem to exist. No peaks. No dips. No attenuations. No exaggerations. Nothing. Nothing but the music.

The rich tapestry of sounds that combine to make music such a joy are revealed in all their glory by the Threes. For example, the very satisfying interplay among Randy Travis's powerful and unique vocals, Dolly Parton's lighter yet equally strong vocals, and Chet Atkins's pickin' on "Do I Ever Cross Your Mind" (*Heroes & Friends*, Warner Bros. 26310) are masterful. The resultant tonal palette is rich with hues and shades that many speakers simply fail to recreate. With the Threes in place, my attention was always drawn to the music; the equipment always became, at best, secondary. While trying to be a reviewer listening to Prefab Sprout's "One Of The Broken" (*Jordan: The Comeback*, Epic EK 46132), all I was doing was thinking about the similarities of the music with early material from Simon and Garfunkel. Oh yes, the sound was rich, full, tight, quick, fast, and crystal clear. The soundstage was wide, deep, and open—but obviously not a live performance. The use of artificial reverb was obvious, the use of vocal overlays easy to pinpoint. I was listening to what the artist and producer intended. The Threes simply let me hear everything that was there.

Maybe it was the word "Jordan" in the title of Prefab Sprout's album, or maybe it was the ongoing problems in the Middle East—I don't know. But I found myself digging out the *Popular Music of William Walton* with Charles Groves and the Royal Liverpool Philharmonic (Studio 2 Stereo). The cover art was as brilliant as ever, with that camouflage-painted Spitfire racing past the white cliffs of Dover. The cut, of course, was the Prelude and Fugue *The Spitfire*. The perspective was distant, the overall sound slightly veiled and muffled, the overall tonality anemic—just as it has always been. Nope, the Response Threes weren't adding any euphonic colorations. If the source was deficient in some way, that was exactly what I heard.

• **Treble:** ProAc has always impressed me with upper-end performance; the Three is no exception. The top is extended, lightning-fast, and extremely clean. Triangles, a devastating task for most speakers, float effortlessly within the sonic fabric of the music (again, listen to Dukas's playful tone poem). Upper harmonics abound, and there's air aplenty. No, the Threes are neither peaked nor exaggerated in the highs, neither bright nor hard. They're fast and real. If the source has a rough top end, you'll have to live with it. The Threes will reveal all and hide nothing.

• **Soundstaging:** Did Tyler lose the magical soundstaging of his earlier designs by going to the tilted-driver alignment in an effort to get the desired bass (which he certainly has achieved)? No way! These big boxes, like virtually every other ProAc before them, have the ability to
simply disappear. The soundstage develops behind and around them. No sound is restricted to (or comes directly out of) the cabinets. Remarkable! These big boxes can actually disappear. They truly recreate a believable three-dimensional soundstage. They don't act as picture windows with a restricted stage placed between the speakers. They don't throw the performers out into the listening room. Much like the equally excellent Wilson WATTs, they simply disappear—they do not exist as a part of the listening experience! The soundstage (assuming there is one to begin with) takes on a lifelike dimensionality all of its own.

- **Imaging:** Within that 3D stage, and once the plinths, spikes, and mass loading have been taken care of, performers are precisely located in space; there's no "wander" or vagueness. The performers themselves have body—no cardboard cutouts here. Once again, the hackneyed term "palpability" leaps to mind. These are performers you can reach out and touch. Somewhat surprisingly, these speakers made the new QSound process—found, for example, on Sting's *The Soul Cages*, A&M 75021 6405-1, LP—more enjoyable. From the open, airy realism of the Spanish-flavored instrumental "Saint Agnes and the Burning Train" to the closing cymbals at the front-right and rear-left of "The Wild Wild Sea," there was a believable sense of space and human performers, many sounds simply hanging in the air.

- **Inner Detail:** As if everything I've described wasn't enough, the Threes are equally adroit at recreating inner detail. Listen to Rufus Reid's fingering (as well as his breathing). See how many of Pink Floyd's rather vulgar words you can now decipher on *Dark Side of the Moon*—or how about Chet Atkins's harmonies with Dolly and Randy. Coupled with its tonal accuracy and uncanny soundstaging capability, the ability to unravel subtle inner detail adds still further to the Threes' wonderful realism.

- **Dynamics:** Ah, but what of dynamics? And can they play loud?

You betcha! Of course, at too low a volume level, no speaker comes alive. The Threes are no exception to this rule. But at anything resembling a realistic volume level, they sing. They can play very loudly, and do so effortlessly. (No doubt my Audio Research Classic 150s had a lot to do with this particular ability—the rest of the system consisted of a Benz-Micro MC-3, Versa Dynamics Model I, Esoteric D-2 transport, Theta DS Pro Generation II, CAT SL-1 revised, Magnan interconnects, and Audio Research speaker cables.) Not only were they able to play loudly, they didn't become fatiguing at these levels the way so many other speakers do. At this point, I'm sure you won't be surprised when I tell you that they also do a splendid job of recreating low-level dynamic shadings as well. The emotion so often conveyed in these subtle ebbs and flows of level shifts is fully communicated.

**Summary**

At $6500/pair, the ProAc Response Threes are not inexpensive in absolute, monetary terms. On the other hand (how many hands are there in this discussion?), they are awfully inexpensive given their breathtaking level of performance. The ProAc Response Threes are marvelous in every regard, and merit audition with speakers at any price. They are, without question, the most satisfying audio component I've auditioned in years. Without a doubt, the ProAc Response Threes are Stuart Tyler's crowning achievement. They are outstanding in every aspect of sonic performance usually discussed. More important, they are unequivocally faithful to the music. *Go bear them now!* If you even consider changing your speakers, I implore you to audition these imported masterpieces from the UK—a truly Class A product in every regard.

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**NESTOROVIC LABS
TYPE 5AS MK.IV LOUDSPEAKER**

Dick Olsher

Long-time Stereophile readers may recall that this is my second encounter of the third kind with the Nestorovic Type 5AS loudspeaker. Back in August 1986 (Vol.9 No.5), when I reported my original impressions, I found the 5AS to be, overall, very listenable and never irritating; a sterling musical transducer at the frequency extremes. The treble quality, in particular, bordered on the magnificent, with a brightness region free from the harshness and zip of the typical dome tweeter. The proverbial fly in the ointment back then proved to be its performance through the lower midrange. The transition region between the midrange and woofers sounded recessed and muffled to the point of rendering most music uninvolving. To use JGH’s quintessential lingo, the 5AS failed to evoke them goosebumps.

But that was five years ago. In the interim, the design has been improved. Mile Nestorovic is, after all, of one of audio’s most original and innovative designers. Early in his career, while employed by McIntosh, he was responsible for the now classic Model MC-3500 power amp. Together with Richard Modafferi, he was granted US Patent No.3,984,635 (in 1976) for the passively damped closed-box bass alignment principle—about which I’ll have more to say later. The reason that the original 5AS had undergone several revisions had little to do, I’m sure, with my comments, but rather reflects Mile’s perfectionist nature.

My latest brush with the Type 5AS came at the 1991 Winter CES, where they sounded so good that I finally prevailed upon Mile to provide me with a fresh pair. Having lived with the Type 5AS for several months now, I can tell you that the Mk.IV version has pushed this speaker’s sound quality virtually to the threshold of Stereophile’s Class A.

The truncated pyramidal enclosure shape has been retained, but the net enclosure volume has been increased to around 1.8 cubic feet by the addition of a “pedestal” section on the bottom of the cabinet. The cabinet itself is quite inert, with 1”-thick particleboard front and back baffles, while the sides are ¾” thick. The sloping sides of the enclosure serve to break up any strong standing-wave modes within the cavity. Reflectors are also provided top and bottom to minimize standing waves between the top and bottom boundaries of the cabinet.

The woofers are screwed and glued in place to minimize basket ringing. This is a pretty heroic solution to a very common problem that afflicts even extravagantly priced designs. If you haven’t done so already, you should read Lewis Lipnick’s glowing account (Vol.14 No.6) of the B&W 800 loudspeaker’s sonic majesty: the Muse Calliope reached out from behind the woofers cones and gently touched Lew’s brow. Galvanic sparks erupted from the union of flesh and ethereal energy as though a miniature volcano had taken residence on his forehead. When the eruption subsided, a pan-
omorphic soundstage opened before his eyes, populated with authentic image outlines, superb dynamic contrasts, and harmonic integrity. "Only $15,000 a pair," whispered Calliope demurely in his ear. Well, you know the rest: "redefines the art of loudspeaker design." Lew's bottom line: no audible shortcomings. Yet, about two weeks after installing the 800s, he noticed a significant deterioration in quality. Bass became increasingly indistinct, and the midrange slowly turned to mush. Over the course of a week, these magnificent transducers had gone from the musically sublime to the sonically hideous. The culprit turned out to be loose woofer-mounting screws. To this day, unless Lew tightens his woofers every month, the problem tends to recur. Gluing the woofer onto the front baffle with, say, silicone rubber would certainly prevent the woofers from working loose, and would also provide additional damping to the woofer basket. Of course, this would make it much more difficult to change drivers, but that's the price of perfection.

The 5AS IV's driver complement is vertically aligned on the front baffle, which is tilted back for time alignment of the acoustic centers of the drivers. The tweeter starts life as a Panasonic leaf tweeter—some non-purists have been known to refer to this sort of design as a "ribbon" because the diaphragm is planar and is driven by magnets—but is modified in-house to minimize resonances. The midrange, fabricated in-house from Philips parts, features an edgewound 2" voice-coil matched to a polyamide dome. Both the 8" and 10" cone woofers are fabricated by Nestorovic to exact specifications. The cone material is a thick, low-density cellulose pulp saturated with plastic polymer. The voice-coils, 2" in diameter, are each wound on a high-temperature former. Clearly these drivers are made to withstand high-power applications. The drivers are said to be closely matched to provide for no more than 0.75dB variation between channels.

The electrical crossover points are 1kHz and 7kHz. The transition between the midrange dome and leaf tweeter is facilitated by a third-order Butterworth network with lots of compensation. The crossover used between the 8" woofer and the midrange is acoustically equivalent to a fourth-order network. Air-core inductors are used throughout; where feasible, caps are high-grade polypropylene types.

The inputs are fused, and two switches are provided to control the upper-range balance and bass damping. In addition to a "flat" position, the Mid-Hi Contour switch provides a 1dB cut from 1kHz to 20kHz, and a 3dB cut from 7kHz to 20kHz. The idea is to provide some control over overly bright (ie, digital) program material. The Bass Damping switch allows one limited control over the LF speaker-room interface. The minimum damping position yields the deepest bass extension, which, however, may overload some rooms. The other two switch positions sacrifice some extension for the sake of smoothing out the in-room response. Nestorovic recommends that the proper bass-damping setting be derived by experiment, and I concur: the room, placement in the room, and choice of partnering amp will all affect the ultimate in-room LF response.

So far I've said very little about the role played by the 10" woofer. Think of it as either an "active passive radiator" that augments the 8" woofer's bass response, or as a passively aided subwoofer. Either way, the effective response of the 10" woofer is similar to that of a passive radiator, or a vent in a bass-reflex design. In his paper in the JAES (Vol.33 No.6, June 1985), von Recklinghausen refers to this sort of bass alignment as a "closed-box bass reflex system." It is now well known that the bass response of a closed box may be extended by simply interposing a passive network between the woofer and amplifier.

A closed box is quite efficient at and below its cutoff frequency, which makes it a natural for LF extension. Unlike a vented box which has vent radiation canceling the woofer's output below the box/port resonance, the closed-box woofer rolls off at a gentle 12dB/octave. The basic idea of the passively aided woofer is to create a resonance between, say, a large capacitor and the woofer's mechanical compliance. This typically requires a capacitor in the 500-1000μF range, and a high-compliance woofer with a large mechanical Q of, say, 10 or more. The volume of the closed box is adjusted so that, without the passive network, the woofer's in-box response gives rise to a peak. The insertion of the passive network then redistributes the energy of the peak to provide an LF extension over a narrow range—at the expense of a reduction in output at and above the original system resonance.

The advantages of such a system compared to a vented design with a similar LF cutoff are
much better woofer control below resonance, avoidance of any extraneous port noises, and typically smaller enclosure volume. The practical disadvantage of such a system, other than cost of the passive network, is the requirement to closely control the woofer's mechanical properties. High-compliance woofers are difficult to fabricate uniformly. The alignment is also sensitive to variations in voice-coil resistance. This is why Nestorovic makes his own woofers. I like this sort of alignment, and hope it gains a wider acceptance among designers. I've used it myself, and will shortly unveil a passively aided subwoofer design (the Zap—named after the family's black Labrador retriever) expressly for the Black Dahlia kit.

What is not well known is that Nestorovic controls the US patent for passively aided closed-box designs. Neither von Recklinghausen in his paper, nor Clark and Geddes in their excellent Audio Engineering Society presentation on passively assisted loudspeakers (JAES preprint 2291) mention the Nestorovic patent. The good news, however, is that, according to Nestorovic, there are no plans to enforce the patent.

Preliminaries
As with any loudspeaker with substantial LF extension, the Nestorovic's room placement must be carefully considered. The general rule is that speaker positions near the rear wall will greatly smooth out the bass response, and in fact Nestorovic recommends a placement within 3' of the rear wall. Most dynamic loudspeakers are designed on the assumption that the woofers will be mounted in a large baffle so that they radiate into half space. That's a reasonable assumption when the woofers are adjacent to a wall, but out in the room, in what has been dubbed the minimonitor position—say, 6' from the rear wall—the rear wall can no longer be considered an extension of the front baffle. Low frequencies will wrap around the front baffle at a critical frequency which depends on the baffle dimensions. This typically happens in the mid- or upper bass. In the deep bass, where wavelengths are on the order of room dimensions, the room actually enhances bass response.

Another problem is that speakers with lots of bass punch tend to overload typically sized listening rooms. Wallboard begins to rattle, windows start buzzing, and standing waves create major dips and peaks in the in-room bass response. The proper audiophile response should be to acoustically treat the room in an effort to absorb some bass energy. Fortunately, because the ear is much less sensitive in the deep bass, midbass and especially upper-bass irregularities are the most troublesome; these are easier to dissipate with room treatment. An overblown upper bass can actually mask a lot of detail in the lower midrange and obscure much hall information.

On the other hand, imaging is not usually optimum with placements flush against the rear wall because of interfering early reflections. So there is room for experimentation with the objective of snapping image outlines into focus without losing bass integrity or unduly energizing room modes. In the Stereophile listening room, the magic spot turned out to be about 3.5' from the rear wall and slightly toed-in toward the listening seat.

With carpeting over a suspended wood floor, the use of spikes to anchor the cabinet proved essential. Three spikes are provided per side, and these screw into the bottom of the enclosure. Without spikes, the 5AS's bass loses definition to the point that bass lines are mumbled or less distinctly enunciated.

A substantial break-in period is required for the woofers. My recommendation is to drive the speakers for a full week before attempting any serious listening. The upper woofer really needs this workout the most. The range it covers sounded muffled and thick during the break-in period. Hall ambient information and lower-midrange detail were obscured, as if heard through a dirty pane of glass. At the end of a week's time, the Windex came out, the dirt was wiped away, and the window on the midrange became quite transparent.

Sonic impressions
The first order of business was to determine the optimum partnering amp. To tube or not to tube? That was the question, and the Threshold SA-12's monoblocks were put to the test. The sound was very clean and detailed, without turning bright or etched through the upper
octaves. There was a natural, nonresonant quality to the treble that precious few dynamic speakers are capable of matching. Female voice was treated with kid gloves. Listening to the Lesley Test (master tape variety) left no doubt in my mind that this speaker was neutrally balanced through the mids and treble. Lesley’s timbre was reproduced about as well as I’ve heard. Not absolutely perfectly, mind you, but as close as any loudspeaker has come. Vibrato was clearly resolved, and Lesley’s upper registers were sweet and imbued with the requisite degree of sunny brilliance. I’ve grown tired of how the Apogee Stage treats this range. I’m referring to the second pair, the samples purchased by Stereophile after the review pair had been returned to Apogee. These came with stands, which do smooth out the deep bass response, and an “improved,” or at least a higher-power-handling version, of the ribbon. No matter what I’ve tried—and I’ve tried just about everything—I’ve been unable to get the speaker’s voicing right through the upper mids. The current Stage is a bit dull and dark-sounding through this range. (TJN will probably disagree with me on this, but since he listens primarily to CDs using solid-state electronics, I’m not really surprised.)

Well, the Nestorovic got Lesley’s voicing right to a degree that clearly put the Stage to shame. Cleo Laine’s rendition of “Send In the Clowns” (*Live at Carnegie Hall*, RCA LPL1-5015) was reproduced with a velvety texture that only a handful of dynamic speakers are capable of.

Treble transients were quick and always well-behaved, without the sizzle, tizz, and sibilance that often pass for hi-fi these days. Bowed and plucked double bass were both tightly defined, with excellent body. The deep bass was delineated with the control and extension that only a truly great solid-state amp can exercise, and this was with the speaker’s damping control set to minimum. The soundstage unfolded with realistic width, and image outlines were tightly localized. Only about two thirds of the depth perspective developed, however. Neither were image outlines fleshed out with the 3-D palpability I’ve come to expect from the best in tubed amps. The clincher for me was the tonality of the lower mids. This range, a key ingredient in the convincing reproduction of orchestral music, was shaded on the dryish side of reality without the bloom and warmth of live music. I needed no further encouragement; on to tubes.

The Valve Amplification Co. (VAC) 90W monoblocks, operated in triode mode, fulfilled my expectations very nicely. Image outlines were now palpably sketched, and the soundstage carpet was rolled out to the back of the hall without any compression. The sensation of hall sound on *Laudate!* (Proprius 7800) was nothing short of terrific. Soprano upper registers were sweet and billowed out to fill the soundstage in natural fashion. Massed voices were resolved to the point of the listener being able to pinpoint individual voices. The scale of Walton’s *Belsbazzar’s Feast* (EMI SAN 324), with a large chorus and orchestra, was captured very nicely. The chorus soared from very soft to very loud without congestion and without even a hint of strain. The articulation of individual voices remained intact all the way up to full voice. Only a full-range loudspeaker is capable of reproducing a tonally realistic semblance of high-powered orchestral music without gagging and embarrassing itself during the really loud passages. Pedro Aledo’s bittersweet voice (Pierre Verany PV12793) chanting mostly traditional Spanish folksongs was naturally portrayed, without the edginess and brightness inflicted by so many solid-state amps. Itzhak Perlman’s violin tone, navigating the Bruch Violin Concerto (EMI ASD 2926), never sounded better. His violin sang sweetly and was tightly focused in space.

I was curious about the sound of the 5AS partnered by Nestorovic’s own NA-1 tubed amps. After all, that was the combination I heard at CES. I also suspected that the voicing of the loudspeaker was tuned around the sound of these amps. The amps were reviewed several years ago (Vol.9 No.8) and had earned a Class B recommendation, but this was my first exposure to them. Used in the Normal Feedback position on the 8 ohm taps, it quickly became apparent that, in terms of midrange tonality, the NA-1 was a perfect match for the Type 5AS. The mids were lushed out in high-calory fashion so that the lower mids sounded meatier and warmer. Harmonic textures sounded liquid, but not thick to the point of obstructing a clear view of the soundstage. It was possible to see deeply into the hall—all the way to the back wall. On a cut like “Cajun Moon,” with Cissy Houston and Herbie Mann on bass flute and flute (Atlantic SD 1682), the sensuous qual-

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ity of the music was fleshed out almost magically by the NA-1. All I could do was be swept away by the musical moment. This kind of moment does not come around often, though it seems that they’re more apt to happen round the midnight hour and with good old vinyl doing its thing on the Aura/Graham turntable.

The sound of the NA-1 appeared to be cast from the mold of classic tube sound. The deep bass was reasonably well defined but lacked the control and extension afforded by the Threshold. Treble transients sounded slightly soft. Low-level detail was reasonably well resolved, but in a broad-brush, non-analytical sort of way, so that detail was not as clearly discernible as with either the VAC or Threshold amps. Textures were liquid sounding but not to the point of becoming mushy or overly thick. The upper mids were sweet sounding, but again not to excess. The presentation of the soundstage was bold and sweeping, in the tradition of the Audio Research classics of yesterday.

Unabashedly romantic music such as Rachmaninoff’s Symphonic Dances, Op.45 (Everest SDBR 3004), was especially well served by this combo. The lyrical elements of the music flowed so naturally, almost song-like. Stereophile’s Intermezzo LP packs a remarkably realistic image size together with excellent dynamics and dedicated playing. Recording engineer Kavi Alexander uses a Blumlein miking technique to preserve lateral image linearity to a tee. All of this and more was quite obvious with the Nestorovic loudspeaker.

**JA measures**

An octave-wide band centered on 1kHz played 1dB less loud than the Snell Type K, implying a sensitivity of around 89dB/W/m, slightly lower than the specification but still high enough to make the 5AS a good match for relatively low-powered tube amplifiers. This was confirmed by the speaker’s impedance (fig.1), which is benign on the whole, though it does drop to 5 ohms in the upper bass and 3.7 ohms in the mid-treble. This graph looks a little messy; this is because it shows the effect of the Mid-Hi Contour and bass damping controls on the impedance, which is minimal except in the high treble and low bass. With the damping control set to its minimum, the speaker can be seen to resemble a traditional reflex box, with a double hump in the bass and a minimum at 30Hz, the equivalent of the port-tuning frequency and the effective limit of the speaker’s flat LF extension. With it set to maximum, the behavior is more like that of a sealed box.

Fig.2 shows the speaker’s impulse response on the tweeter axis, typical of a multiway design with higher—than—first-order crossover slopes. A couple of reflections can be seen just over 1ms after the pulse, these perhaps being from the baffle edges. Taking five such impulse responses across a 30° lateral “window,” transforming each to the frequency domain, and averaging them to minimize the effect of microphone-position—dependent interference effects gives the quasi-anechoic response shown to the right of fig.3. (This is plotted with 88Hz resolution above 1kHz and 15Hz resolution from 200Hz to 1kHz.) This can be seen to be evenly balanced overall, implying a basically neutral sound, broken by a degree of midrange peakiness at 500Hz and 1750Hz, and a slightly overemphasized mid-treble. This is not sufficient in extent to render the 5AS’s sound bright or fizzy—DO felt the speakers to have a “natural, nonresonant quality” to their treble—but in my brief auditioning of the 5AS, I did find their treble and midrange balance to be somewhat

![Fig. 1 Nestorovic Type 5AS, electrical impedance and phase with Mid-Hi Contour control in A, B, and Off positions, and bass damping control in the minimum and maximum positions (2 ohms/vertical div.)](image1)

![Fig. 2 Nestorovic Type 5AS, impulse response on ribbon axis at 1m (5ms time window, 30kHz bandwidth, Mid-Hi Contour Off)](image2)
forward, particularly in comparison with the admittedly rather dark-sounding Apogee Stages. This is not a reticent speaker. The effect of the Mid-Hi Contour control in its A position (fig.4) was to provide a degree of shelving above 4kHz, reaching -3dB from 7kHz to 20kHz. In its B position, a mild suckout (-1dB) appears at 1kHz, with then a moderate rolloff above 10kHz. Again, which switch position the listener prefers will depend on the rest of the system and room.

To the left of fig.3, below 200Hz, are shown the responses of the upper (8") and lower (10") woofers, measured in the nearfield with the microphone almost touching the dustcaps and

![Fig.3 Nestorovic Type 5AS, anechoic response on ribbon axis at 1m averaged across 30° horizontal window (Mid-Hi Contour Off), and nearfield response of upper and lower woofers below 200Hz, each with bass damping control in the minimum and maximum positions](image)

![Fig.4 Nestorovic Type 5AS, effect of Mid-Hi Contour control, normalized to response at 1m on ribbon axis ("B," top; "A," bottom)](image)

![Fig.5 Nestorovic Type 5AS, vertical response family at 1m normalized to the tweeter-axis response, from back to front: anechoic response 15° above the cabinet top; level with the cabinet top; reference response; on the midrange dome axis; and on the 8" woofer axis](image)

![Fig.6 Nestorovic Type 5AS, horizontal response family at 1m, normalized to the tweeter-axis response, from back to front: reference response; anechoic response 7.5° off tweeter axis; 15° off-axis; 30° off-axis](image)

![Fig.7 Nestorovic Type 5AS, cumulative spectral-decay plot](image)
with the LF Damping control set to minimum and maximum. (The level matching between 
these curves and that to the right of fig. 3 can only be approximate.) Both operate from around 
70Hz to 200Hz, but the 8” unit rolls off below 
70Hz. The 10” woofer extends the −6dB bass 
response point to 30Hz (maximum damping) 
or 25Hz (minimum damping). The latter also 
features what appears to be a faster rate of roll-
out than the port in a reflex design, as well as 
as a degree of peaking. As DO noted, whether this 
will be found musically appropriate or not will 
depend to a large degree on the listener’s room, 
furnishings, and ancillary components. (DO 
did prefer the damping control set to its min-
imum position.)

With multiway loudspeakers, the manner in 
which the sound changes according to listen-
ing axis can be significant. Fig. 5 shows the 
speaker’s anechoic response (from front to 
back) on the 8” woofer axis, on the midrange 
dome axis, on the tweeter axis, level with the 
cabinet top, and 15° above the cabinet top, all 
normalized to the tweeter-axis response. (This 
means that the graph assumes the basic speaker 
response to be perfect—ie, flat—and shows just 
the changes.) With the listener’s ears level with 
the midrange unit or below, the treble both 
becomes sucked-out in nature and rolls off 
early. By contrast, a standing listener will hear 
a sound that is both bright, due to low-treble 
emphasis, and threadbare, due to the sucked-
out mid-treble—once again I must warn read-
ers of making value judgments on loudspeakers 
when standing in the dealer’s sound room. 
Those auditioning the 5AS should listen with 
their ears somewhere between the bottom of the 
ribbon tweeter and the top of the cabinet 
if they are to get the most neutral balance.

Horizontally, the 5AS is well-behaved, as can 
be seen from fig.6, which shows how the re-
response changes as the listener moves from 
being on the tweeter axis to being 30° off that 
axis. The high treble rolls off evenly the more 
the listener gets off-axis, which is excellent. Per-
haps more significantly, the speaker’s response 
gets more peaked in the low treble off-axis, 
which suggests that sidewalls should be disper-
sive or absorptive, if the room sound is not to 
get too bright. Certainly, the 5AS should not be 
positioned too near the sidewall.

Finally, fig.7 shows the Type 5AS’s “water-
fall” plot, revealing how the speaker’s anechoic 
frequency response changes dynamically as 
the pulse dies away. Though a degree of hash 
in the treble can be seen, this is very mild, lying 
more than 15dB down from the initial response. 
In addition, there are no strong modes present 
which would otherwise be heard as resonant 
colorations. The behavior in the midrange is 
more complex, however, due presumably to 
the small reflections noted in fig.2. (Note the 
“wave” between 400Hz and 1kHz that 
develops near the 2ms mark.) It is possible that 
this would explain the fact that DO didn’t find 
standstage depth to develop as fully as he 
would have liked unless he resorted to the use 
of tube amplifiers. —John Atkinson

DO offers some final thoughts

The Nestorovic Type 5AS has evolved over the 
past several years and is now in full bloom. This 
is a full-range loudspeaker in the finest sense 
of the word. In terms of tonal balance, LF exten-
sion, and dynamic scale, this speaker allows 
one to fully explore orchestral music without 
trepidation, congestion, or any form of atten-
dant harshness. And how sweetly it caresses 
female voice, without the bright or sizzly col-
orations so many loudspeakers routinely and 
deplorably engage in. It is best mated with a 
vacuum-tube power amplifier for fleshing out 
the lower mids and eliciting the most palatable 
standstage imagery. Bass definition suffers 
somewhat by abandoning solid-state drive, but 
that must be balanced against the benefits de-

erived with tubes in the midrange.

As I was sitting down to write this review, I 
received a call from Bob O’Neill in Denver. 
Bob, a long-time audiophile who also con-
tributed to Stereophile in the not too distant 
past, had just purchased a pair of the Nestor-
ovic speakers. His wife, who had seen the sys-
tem evolve through numerous iterations, in-
cluding the Martin-Logan Sequels and CLSes, 
remarked that finally there was music in the 
house. If you’re after a full-range speaker that 
can deliver the musical goods, look no further. 
It’s unbeatable at the price. After living with this 
speaker for several months, I can’t think of a 
comparably-priced dynamic speaker—B&W, 
Thiel, Vandersteen, or whatever—that appeals 
to me as much. Run, don’t walk, to your nearest 
Nestorovic Labs dealer.
SOUL POWER

John Atkinson reviews high-end stereo power amplifiers:
the Goldmund Mimesis 8 and Mark Levinson No.235

Mark Levinson No.235 solid-state stereo power amplifier. Rated power output: 200Wpc continuous into 8 ohms (23dBW) with less than 0.1% THD, 400Wpc continuous into 4 ohms (23dBW) with less than 0.2% THD, both from 20Hz–20kHz, both channels driven. Damping factor: greater than 600 at 50Hz, 8 ohms (equivalent to an output impedance of 0.013 ohms). Frequency response: 4Hz–140kHz, –3dB. Input impedance: 50k ohms shunted by 1.5nF. Voltage gain: 26dB (load not defined). Input sensitivity: 141mV for 1W output. Damping factor: not specified. Dimensions: 19" (483mm) W by 8.25" (210mm) H by 15.7" (399mm) D. Shipping weight: 105 lbs (48kg). Serial number of sample reviewed: 5001. Price: $5900. Approximate number of dealers: 65. Madrigal Audio Laboratories, P.O. Box 781, Middletown, CT 06457. Tel: (203) 346-0896. Fax: (203) 346-1540.

Goldmund Mimesis 8 solid-state stereo power amplifier. Rated power output: 125Wpc into 2 to 8 ohms (15–21dBW), 100Wpc into 1 and 16 ohms (11 & 23dBW), 250Wpc into 3 ohms (maximum) (19.7dBW), both channels driven. Maximum voltage swing: 45V peak, both channels driven. Maximum current swing: 30A peak, both channels driven. Transient Intermodulation Distortion (TID): less than 0.01% (–80dB) up to 25V output into 8 ohms. Total Harmonic Distortion (THD): less than 0.01% (–80dB) up to 25V output into 8 ohms. Frequency response: DC–100kHz, ±0.1dB; DC–40kHz, ±1dB; DC–800kHz, ±1dB (all up to rated power). Crosstalk: >90dB, common ground. Input impedance: 50k ohms. Input sensitivity: 1.55V RMS for rated output. S/N ratio: better than 100dB, 20Hz–20kHz; better than 110dB, A-weighted. Risetime: less than 700ns. Slew rate: greater than 100V/μs. Damping factor/output impedance: not specified. Dimensions: 19" (483mm) W by 6" (150mm) H by 21" (488mm) D including handles. Weight: 77 lbs (35kg). Serial number of sample reviewed: 2007. Price: $6400. Approximate number of dealers: 20. Manufacturer: Goldmund S.A., 34 Avenue de la Gottaz, 1110 Morges, Switzerland. US distributor: International Audio Technologies Ltd., 13897-J Willard Road, Chantilly, VA 22021. Tel: (703) 378-1515. Fax: (703) 378-1517.

"A high-quality amplifier must be capable of passing rigid laboratory measurements, meet all listening requirements, and be simple and straightforward in design in the interest of minimizing performance degradation . . . ."

—Cdr. Charles W. Harrison Jr. Audio, January 1956

"It don't mean a thing if it ain't got that swing."

—Duke Ellington

My mother was visiting. "What exactly is a preamplifier?" she asked. I explained, in some detail with helpful use of analogy (though the fact that we were in one of Santa Fe's many excellent restaurants meant that I had to eschew the use of slides and an overhead projector). "Why then do I need a power amplifier?" was her next question. Obviously I had left something out of my expert explanation.

1 From "High Quality Dual-Channel Amplifier:" reprinted in Audio Anthology: When Audio Was Young, Vol.4, published by Audio Amateur Publications, Inc., available for $16.95 plus $1.75 S&H from Old Colony Sound Lab, P.O. Box 243, Peterborough, NH 03458-0243. Tel: (603) 924-6371. Fax: (603) 929-9467.

Dessert interrupted the fine flow of my discourse, and she had returned to the UK by the time I had remembered what it was I was going to say. Which was:

Your source components, be they phono cartridges, CD players, FM tuners, or tape recorders, output an electrical signal that by convention represents the music's original acoustic pressure waves as a varying voltage. This voltage is passed along the reproduction chain, raised in level, its shape modified in a mid-fi system by tone and other controls, in a high-end system preserved with its shape as intact as possible, until it comes time for the loudspeakers to use it to generate acoustic pressure waves that correspond exactly—if you've paid enough for the speakers, of course—to those impinging on the mike in the recording studio.

But—and it's a large "but"—a loudspeaker is driven by a varying current, not voltage. Which is where the power amplifier comes in. Its output voltage ideally is a magnified facsimile of the voltage applied to its input; when that voltage is applied to the loudspeaker terminals, the speaker draws current from the
amplifier, the exact amount dependent on both
the voltage and the manner in which the
speaker’s impedance magnitude and phase
change with frequency. All that the amplifier
has to be able to do is source that appropriate
amount of current; no more, no less.

If you multiply the maximum RMS voltage
the amplifier can deliver by the current that is
equivalent to that voltage into a specified load,
you have the amplifier’s power rating: “100
watts,” for example. You can get a “100W”
amplifier from an Oriental manufacturer for as
little as $300. You can also pay $6000 or more
for a “high-end” “100W” stereo amplifier. How
can it be possible for apparently identically
rated power amplifiers to cover a price ratio of
20 times? Is the manufacturer of the expensive
amplifier guilty of consumer fraud? Or has the
manufacturer of the cheap amplifier omitted
something?

The answer to both questions is “not neces-
sarily.” Look again at my specification of an
ideal amplifier. The amplifier delivers to the
loudspeaker a magnified voltage; the loud-
speaker then sucks current proportional to that
voltage. Many amplifiers cannot deliver that
current if the loudspeaker has an impedance
much below 8 ohms; or if the speaker’s phase
angle—a measure of how far apart in time the
voltage and equivalent current become—is too
great; or they cannot deliver that current in the
low bass or high treble, the amplifiers’ specifi-
cations only being valid in the midrange; or if
they can deliver the current, the shape of the
voltage waveform is affected, becoming dis-
torted in one or more of a number of ways; or
the amplifiers become less and less stable the
more their output current increases; or they
can only deliver that current for a very limited
time; or their ability to deliver that current is
dependent on either the kind of music being
reproduced or the recent history of the music
signal (which affects the temperature of their
heatsinks)—or even both.

All amplifiers suffer to a lesser or greater
extent from some or all of these ills, but as a
general rule, the more money you pay for an
amplifier, the more likely it will—or should—
resemble that perfect amplifier. It’s even prob-
able that the more an amplifier resembles the
ideal, the more likely its owner will enjoy his
records. Which brings me to this review. In this
and the next two issues, I will be reporting on
the behavior of a small number of “high-end”
amplifiers. Does their behavior more closely
approach the paradigm than that of less expen-
sive models? Can there be an amplifier which
sounds superb despite being an exception to
that ideal? I kick off with the Mark Levinson
No.23.5 and the Goldmund Mimesis 8. Both
offer high specified power, and both are simi-
larly priced—they’re expensive.

Review system context

Loudspeakers used during the evaluation of these amplifiers were mainly the Wilson WATTs and Puppies and KEF R107s, though Avalon Eclipses, Acoustat Spectra 1100s, MB Quart 490s, and Epos ES11s also made appearances. Front-end components consisted of a Linn Tonearm/Lingo/Ekos/Troika setup sitting on an ArchiDee table to play LPs, a Revox PR99 to play 15ips master tapes, and, at various times, a Meridian 208 CD player, the Stax DAC-Xit and VTL Reference D/A processors driven by Meridia-

nian 602 and Wadia WT-3200 transports, or the Krell MD-1/SPB-64X combination to play CDs. Preamplification first consisted of the Expressive Technologies transformer hooked into a Mod Squad Phono Drive EPS and a Threshold FET ten/e line stage, this combination then replaced by the French YBA 2 preamplifier. My Mod Squad Line Drive Deluxe also saw service as the system control center for CD replay. (Recently upgraded to the latest spec, the Mod Squad improves on its predecessor’s already stunningly transparent presentation of musical
detail.) The D/A processors were connected to the preamplifier with 0.75m lengths of AudioQuest Diamond, while the power amplifiers were connected to the preamplifier via 15’
lengths of AudioQuest Lapis unbalanced inter-
connect. Speaker cable was 2m lengths of AudioQuest’s new Dragon.

For comparison purposes, I used the Stere-
ophile-owned sample of the Krell KSA-250 that
Robert Harley wrote about last January (Vol.14
No.1, p.170), the magazine-owned pair of Mark
Levinson No.20.5s that I reviewed in Septem-
ber 1989 (Vol.12 No.9, p.138), and an Audio Re-
search Classic 60, though this has been retubed
since I reviewed it in September 1990 (Vol.13
No.9, p.134). Levels during the comparisons
were matched to within ±0.1dB at 1kHz using
my Mod Squad Line Drive Deluxe to pad down
the more sensitive amplifier of each pair. (While
this procedure in itself will change that ampli-
sifier’s sound to some extent, I tried to account

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for this by comparing the sound with the Line
Drive set to no attenuation with the sound of
it out of circuit.)

The most important change made to the sys-
tem was one that held up the writing of this
review for several months, such was its antici-
patated impact. Though my listening room is
well-equipped with wall sockets, there are actu-
ally only two 15A circuits serving these outlets.
Ever since I had converted what had hitherto
been our house’s master bedroom into my
listening room, I had intended to run new cir-
cuits to it. Somehow, there always seemed to
be more urgent jobs that needed to be done
around the house—new roof, new main drain-
age, new bathroom, new windows, new stucco,
etc.—but finally this Spring there was enough
electrical work to be done that we managed to
attract the interest of a local contractor.
(“Choosing a contractor” is a phrase that, in my
experience, is more true turned upside-down:
they choose you—if you can supply references
and show a willingness to both give them
money on an unlimited payment schedule and
allow them to become part of your extended
family. Having sunk what could have been the
money for our child’s education into the fabric
of our home, we find the omnipresent Eldon
character in TV’s “Murphy Brown” to be only
too real.)

But I digress. For less than the cost of a
budget power amplifier—a mere $373.45—
the electrician ran two new 30A lines to the
listening room, one with the hot on one side
of neutral, the other on the other. Each had its
own circuit breaker and each fed two hospital-
grade wall sockets. (These orange receptacles
grasp the prongs of AC plugs with a clasp akin
to the Vulcan death grip.) All source compo-
nents and the system preamplifier were plugged
into an Inouye AC conditioner, in turn plugged
into one of the new lines; power amplifiers
were plugged into the other new line.

The sonic effect was nothing short of stun-
ing. Within the context of a power amplifier’s
characteristic sound quality, bass fundamentals
relatively dropped away to minus infinity, such
was the increase in their weight, while the
WATT/Puppy’s “hump” in the upper bass be-
came considerably less bothersome. Yes, the
characteristic sounds of components were not
changed—black was not rendered white—but
the differences between those characters was
heightened, the overall quality of each en-
hanced. The sonic contrast knob was turned
up a notch, if you will, the blacks becoming a
deeper black, the whites becoming more brillian-
t.

There is no doubt in my mind that installing
these dedicated AC lines was the single most
cost-effective improvement I have ever made
to the sound of my system. If you can bring
new AC power to your listening room without
too much disturbance to your house or house-
hold—and you can find an electrical contractor
who doesn’t feel that he would be in danger of
diminishing his social status by taking on your
work—do it.

Mark Levinson No.23.5: $5900
The No.23.5 is an evolutionary development
from the Mark Levinson No.23 that Lewis Lip-
nick raved about in 1988 (Vol.11 No.9), featur-
ing revised input circuitry, among other things.
(The changes are comprehensive—it costs
$3500 to upgrade from 23 to 23.5 status.)
Styiled in the traditional Mark Levinson fash-
ion, with side-mounted heatsinks and an all-
black finish broken by white engraved legends,
the 23.5 offers two sets of inputs on the chassis
rear, single-ended or unbalanced via Camac
sockets and balanced via XLRs. Speaker con-
nection is via a single pair per channel of 5-way
binding posts.

The No.23.5 belies its modest size when you
try to lift it, its 100-lb weight giving rise to mut-
tered curses as you try to maneuver it into posi-
tion into the listening room. Removing the top
cover reveals a full chassis: two shielded 1258VA
toroidal transformers, one for each channel,
occupy the full depth of the central space, with
two large, vertically mounted 36,000µF electro-
lytic capacitors on either side serving as the
output stage reservoirs for each channel's ±83.7V voltage rails. The caps' ground connection is a solid proprietary-alloy bar of high-purity copper plated with a number of materials, including silver; more solid bars join the voltage rails to the output devices. There is just enough space between these caps and the side to squeeze in the driver and output circuitry, the 12 complementary push-pull output transistors and their heatsinks then forming the chassis sides.

Though there's enough standing bias to ensure that these output devices run warm, the 23.5 operates its output in class-A/B. Also mounted to the heatsinks are the driver transistors, these operated in class-A and arranged as a complementary emitter-follower driving two further complementary emitter-followers connected in parallel to get sufficient current gain. The input and driver stages for each channel are powered by a separate regulated power supply derived from separate transformer windings, preventing the output stage from modulating the voltage rails for the preceding circuitry.

The balanced inputs feed a cascoded differential amplifier, which then feeds a second cascoded differential amplifier with a current mirror. (When the No.23.5 is operated as a single-ended amplifier, a shorting strap links pins 1 and 3 of the XLR, tying the inverting input of the differential input to ground.) These differential amplifiers use discrete constant-current sources throughout. Though the No.23.5 has a push-pull output stage, it is not differential throughout, the current mirror converting the balanced signal to unbalanced. The input circuitry incorporates a soft-clipping circuit to prevent high-order overload harmonics from reaching the output stage. Protection circuitry prevents turn-on/turn-off transients from reaching the output, and also monitors AC mains current, heatsink temperature, DC offset, phase-angle-dependent output-stage power dissipation, and whether or not the output has been short-circuited.

In both its construction and its design, the No.23.5 is a thoroughly modern amplifier, engineered for excellent sonics and long-term reliability (though it is a little more complicated than Commander Harrison's definition).

**Sound:** The No.23.5 served as one of the workhorse amplifiers during my last six
months' worth of equipment reviews. As seems to be the fate of review samples, however, the No. 23.5 suffered a fault in one channel a few weeks after delivery. An increase in distortion at low levels turned out to be due to a loose washer lodging itself where it could do most damage, something one would expect to be a one-off problem. A trip back to the factory put things right, and auditioning continued.

The original No. 23 was not one of my favorite amplifiers. Powerful, yes; dynamic, very; but it had a vivid, upfront character in the mid-treble that both presented the listener with very much of an in-the-orchestra balance and made system matching somewhat problematic if any of the other components had any kind of mid-range forwardness. By contrast, the 23.5 is considerably more laid-back in this region, to the benefit of the music, which is, overall, less pushed forward at the listener. This is not to say that it is a soft-sounding amplifier. Though the No. 23.5 gets what J. Gordon Holt once called the "blatty brassiness" of trombones and French horns correct, its midrange is still rather forward and rather hard-sounding in absolute terms, meaning that it would be a less-than-optimum match for similarly balanced loudspeakers. I also occasionally detected what I thought was a hint of tizziness in the extreme highs, but not to any musically significant extent. The 23.5 is also unkind to hyped-up recordings. I was browsing in a mall record store while my wife hunted for baby things when I heard this strange mix of generic Eurosynth coupled with what sounded like Gregorian chant floating from the ceiling-mounted B&W's.

"What's that?" I asked the assistant.

"Enigma."


Why not became obvious when I got home. This recording has so much presence energy wound in by the engineers that it whistles. And the chant voices sound like the "before" example in an ad for a magic substance guar-an-teed to eliminate intermodulation distortion. The Levinson-driven WATTs let you hear every little thing the engineers had done — and it is not magic!

But it was in the bass where this Mark Levinson amplifier excelled. My listening notes keep coming back to the word "slam." No matter what speakers were hooked up to the No. 23.5, the sound had a combination of low-frequency weight and extension that, in the loudest passages, felt like it would implode the listener's chest cavity. Even with the keyboard bass "drum" on the Enigma disc. I've mentioned track 3 of Jeff Beck's 1989 Guitar Shop album (Epic EK-44313), "Behind the Veil," in previous reviews. Drummer Terry Bozzio supplies a "real" backbeat bass drum that can literally explode into the listening room twice every measure. The Levinson gave this drum the appropriate weight, coupled with a dynamic solidity that maximally underpinned the music. On "Melody," track 2 of David Crosby's post-drug, post-prison Oh Yes I Can album (A&M CD 75021-5232-2), the synth underlying the song's bridge positively plunged in the bass, raising the listener's hackles almost as much as the velvet-edged, parallel-moving tenor harmonies that The Cros adds at the same time.2

The word "dynamics" doesn't just apply to how loud a component will play without strain, though that is not an insignificant factor when it comes to musical enjoyment (at least for those of us not too staid to reach for our air guitars when the occasion permits — no, demands it). "Dynamics" perhaps more importantly describes how well a system reproduces the music's ebb and flow. With a truly Class A system — and in real life — there seems no limit to the manner in which the sounds of instruments can rise and diminish in volume. Neither does one instrument's sound modulate that of another. With less-than-perfect reproduced music, however, instruments and voices often seem to merge as they play louder. Rarely does the reproduced soundstage expand to encompass the listener — the sound just gets louder and more homogenized. The Mark Levinson more closely approaches the live situation in that the soundstage gets "bigger" as it gets louder, with an excellent sense of dynamic freedom.

A diagnostic recording I use in this respect is one I made some years back of Elgar's Dream of Gerontius. A massive work, scored for three solo voices, full orchestra, double choir, and organ, its quietest passages demand exceptional reproduction of detail to be rendered cleanly, with the appropriate image depth.

2 Richard Lehnert loaned me this CD just after I finished reading Crosby's biography, Long Time Gone, which, much to my surprise, I found both to be a moving book and one that brought to question my own attitude to so-called "recreational" drugs.
while its climaxes stretch systems to, even past, their limits. Elgar often reinforced exaggerated choral crescendi in this work by progressively adding instruments so that the overall sound gets both louder and more complex as it swells. More so than any other amplifier I have used, the Levinson faithfully tracked Gerontius's dynamic demands, both giving the impression of unlimited power reserves and doing an excellent job of keeping the individual sounds of instruments and voices suitably separate in these crescendi.

It is perhaps in its presentation of image depth where the No.23.5 doesn't quite scale the heights. Due to a lack of cooperation from the Ely Cathedral staff, the only place I was allowed to put the Soundfield microphone to record Gerontius was on a high stand above the conductor's head. This lends the recorded soundstage very much of a wide-angle perspective, the sense of depth being exaggerated compared to the real thing. Though the choir was behind the orchestra, the mike placement means that they sound quite a bit more distant than they were. The Levinson driving the WATT/Puppies brought them more forward, a case of two wrongs somewhat canceling.

One of the tracks I intend to put on the second Stereophile Test CD3 is a piece by Corey Greenberg, "Eden," where he uses all the possible tone colors that the Fender Stratocaster guitar is capable of to paint, via a multitrack recorder, a vividly defined yet totally artificial soundstage, extending from speaker to speaker and from the plane of the speakers to some point deep behind that plane. I say "artificial" because this soundstage does not correspond to any original event or to any real acoustic, yet the space between and behind the loudspeakers is illuminated by swirling and swooping, whimmy-barred, fuzzed and phased, reverberated and repeat-echoed Strats overlaying a clean-machine cadential ostinato eerily reminiscent of Hendrix (to whom the piece is dedicated) performing "Angel" on the Lifelines set. Via the 23.5, this produced space (I can hardly say reproduced) is reverberant but with the rear walls of the space not particularly deep. The reverberation tails are clearly delineated by the 23.5, but the artificial space is not that large. Via a space-champ amp such as the Audio Research Classic 60, that acoustic sounds softer-walled, the ambient die-away being less well defined, but, paradoxically perhaps, it is considerably larger, the rear and side walls being set farther back from the listener.

Don't get me wrong—the Levinson doesn't offer a flattened mid-fi stage. The horns on J. Gordon Holt's Praeludium recording on the original Stereophile Test CD are still set well back in the image, as indeed they should be. But it is possible that the No.23.5's somewhat more vivid balance overemphasizes recorded detail to the detriment of its depth presentation. Whether it is more or less accurate in this behavior is hard to determine with an electronic recording. However, those who desire the deepest of all possible soundstages should mate the 23.5 with loudspeakers that already excel in that area, such as the KEF RI07. (This slightly dark-sounding speaker is also an excellent match for the Levinson's rather upfront tonal balance.) With the WATT/Puppies, however, the combination definitely produced a more shallow stage than was absolutely correct, both flute and piano on Stereophile's Poem LP moving nearer the listener than they had been at the original event, for example.

Comparisons: The first comparisons were performed with the more-than-twice-as-expensive, true class-A, Levinson No.20.5 monoblocks. The stereo amplifier had actually more impact in the bass, something I would not have expected given the fact that the monos have fully regulated power supplies for their output stages. Nevertheless, the 20.5s were a little less well-defined in the midbass region. Soundstagewise, the two amplifiers were very similar in their depth presentation, though the 20.5s did sound a little more veiled throughout the midrange. The 23.5's presentation of detail was both more delicate and more comprehensive, meaning that instruments at the rear of the stage were more audible, while remaining about as far away. While still a superb amplifier, the No.20.5 would, I feel, benefit from some of the design thinking that metamorphosed the No.23 into the No.23.5.

Next up was the obvious head-to-head competitor for the No.23.5, the $5900 Krell KSA-250. While each ranks among the finest solid-state amplifiers I have used, they still differed significantly in their sonic characters, meaning that a system set up optimally for one would need some adjustment to get the best

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3 Provisionally scheduled for early 1992 release.

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from the other. In a nutshell, the Krell was less upfront in its midrange balance than the Levinson, sounding slightly "slower" and less vivid overall. It was also softer in both the upper bass and extreme highs, and presented a deeper soundstage. The Steinway piano on Stereophile's Intermezzo album was distinctly set more forward in the soundstage via the No.23.5 when compared with the KSA-250, with slightly less of a sense of the surrounding space. Microphone hiss was also a little more obtrusive in the top octave as presented by the Levinson. The Krell didn’t quite achieve the dynamic contrast offered by the Levinson, however, nor was the piano’s left-hand register quite as well defined. It would be a hard call deciding which amplifier was a better match for the WATTs and Puppies, the Krell offering a better balance overall but losing out to the Mark Levinson from the upper bass on down.

Comparing the No.23.5 with the similarly priced Goldmund Mimesis 8, the Swiss amplifier offered even more soundstage depth than the Krell and, when optimally set up, had a more musically neutral midrange than either American amp. It couldn’t compete with them, however, when it came to bass reproduction: music combining complex scoring and high levels of bass energy sounded significantly more muddy on the WATT/Puppies when driven by the Goldmund.

The final set of comparisons was with the Audio Research Classic 60. Now it's true that the significantly lower-powered and less expensive tubed amplifier doesn't necessarily compete with the No.23.5 in the market, a more relevant comparison perhaps being between the solid-state amplifier and a pair of ARC Classic 120 monoblocks. But I'm very familiar with the Classic 60, and felt that as long as I didn't fall into the trap of describing differences that are purely due to the tube amplifier's more limited power capability, the comparison would be illuminating.

Despite the WATT's rather cruel impedance, which drops to 1.75 ohms in the low treble, the Audio Research drove the speakers to reasonably high levels from its 4 ohm taps. There was no doubt in my mind, however, that even at levels well below its clipping point, the Audio Research could not reproduce the music's dynamic contrasts as well as the Levinson. However, although the 60's low frequencies lacked the slam of the Levinson’s, the leading edge of a kick drum’s sound and the body of its tone was more in proportion via the tube amp, the “pat” and the “purr” being optimally balanced. In general, as described earlier, the Classic 60 offered a significantly deeper soundstage via the Wilson speakers, and individual instrumental images within that stage—the violin and piano in the Wilson Audio Beethoven Sonata recording (W-8315), for example—were more palpable, more “modeled” in the visual sense, as though the instruments were illuminated by a light placed more to the side than to the front. Tonalv, however, the Mark Levinson had a little more midrange body with the Wilson speakers, which made the overall sound less lean/more neutral.

**Measurements:** One of the things that distinguishes expensive power amplifiers from the rest is that they rarely break or shut down on the test bench, even when driving 2 ohm loads at high levels at high frequencies. Such was the case with the No.23.5, which proved a powerhouse. With one channel driven, it comfortably exceeded its 23dBW power specification, the 1% distortion point being reached at 305W into 8 ohms (24.8dBW), 505W into 4 ohms (24dBW), and 750W into 2 ohms (22.7dBW), this behavior shown graphically in fig.1. With both channels driven, these figures dropped slightly, to 290W into 8 ohms and 500W into 4 ohms, but, as with the 2 ohm delivery, I feel this to be more due to the wall voltage drooping, ultimately from 116V to 110V, than to any deficiency in the No.23.5’s power supply. (We do not hold the wall voltage constant during power tests, feeling that this more accurately reflects the situation in the owner's home.) The amplifier's calculated output impedance was very low, at 0.05 ohms (both channels) at 20Hz and 1kHz, rising to 0.07 ohms at 20kHz. Though this is higher than specification, experimental error could account for the discrepancy, the difference being inconsequential.

Fig.1 used a signal frequency of 1kHz; it implies a measured distortion and noise much better than spec, which was confirmed by looking at how the THD and noise content of the signal varies with frequency and load. The fact that the behavior hardly changes at any frequency, other than above 5kHz as the load reduces to 2 ohms, suggests that the 23.5 will not be fazed by anything coming down the pike.

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What distortion there is is almost pure third-harmonic, as can be seen by fig.3, which shows the waveform of a 1kHz tone at 135W into 4 ohms (upper trace) and the THD+Noise waveform (lower trace). The level of the distortion has been exaggerated for the purposes of plot-

Fig.1 Mark Levinson No.23.5, distortion vs output power into 8 ohms (bottom), 4 ohms (middle), and 2 ohms (top)

Fig.2 Mark Levinson No.23.5, THD+Noise vs frequency at 1W into 8 ohms, 2W into 4 ohms, and 4W into 2 ohms (right channel dashed)

Fig.3 Mark Levinson No.23.5, 1kHz waveform at 135W into 4 ohms (top), 0.004% distortion and noise waveform with fundamental notched out (bottom)

Fig.4 Mark Levinson No.23.5, spectrum of 50Hz waveform, 10Hz–1kHz, at 72W into 4 ohms

Fig.5 Mark Levinson No.23.5, HF intermodulation spectrum, 300Hz–30kHz, 19+20kHz at 48V p-p into 4 ohms (linear frequency scale)

Fig.6 Mark Levinson No.23.5, 10kHz squarewave at 2W into 8 ohms

Fig.7 Mark Levinson No.23.5, frequency response at 1W into 8 ohms, (0.5dB/vertical div., right channel dashed)

Fig.8 Mark Levinson No.23.5, L on R (top) and R on L (bottom) crosstalk (5dB/vertical div., A "T" means measurement at that frequency was dominated by noise)
ting a readable graph; its actual level was just 0.004%! The relatively benign third-harmonic nature of the 23.5’s transfer function is confirmed by fig.4, which shows the spectrum up to 1kHz of a 50Hz tone at 72W into 4 ohms. The only harmonics sticking up above the FFT noise floor are the third (shown by the marker to be -83dB (0.007%) with respect to the fundamental level) and the sixth. This characteristic behavior didn’t seem to change with frequency, load, or level. Looking at the intermodulation behavior at a similar level into 4 ohms with a CD-sourced 1:1 mix of 19 and 20kHz tones revealed a slight amount of 1kHz difference product, this not present in the CD player output. The marker in fig.5 shows this to be 72dB down, however, representing just 0.025% of the signal level.

Turning to measurements of linear changes wrought by the 23.5 on a signal, fig.6 shows the waveform of a low-level 10kHz squarewave, this excellent in shape with no ringing, and a rounded leading edge due to the amplifier’s restricted ultrasonic bandwidth. This was confirmed by the small-signal frequency response (fig.7), which shows the HF output to be 3dB down at 12kHz. Rolloff at the extremes of the audio band was negligible, at -0.1dB at 20Hz and 20kHz.

Finally, the No.23.5 was non-inverting both when used single-ended via the Camac input or used balanced with pin 2 of the XLR “hot.” The measured input impedance at 1kHz was 47k ohms. It had excellent unweighted audio-band S/N ratios (relative to 1W into 8 ohms) of 92/91.5dB (L/R), and, due to its dual-mono construction, had low levels of crosstalk over most of the band, though, as can be seen from fig.8, capacitive coupling from somewhere does lead to the figure rising above -98dB (L on R) and -109dB (R on L) above 1kHz. All measurements were performed after the amplifier had been driving an 8 ohm load at one-third power for 60 minutes. This thermally stresses to the limit an amplifier with a class-A/B output stage. At the end of that period, the 23.5’s heatsinks were just too hot to touch, implying a temperature of 65°C or so. (The amplifier’s thermal protection kicks in at 80°C.) Its voltage gain when loaded by 8 ohms was 26.8dB, implying an input of 2.25V to give full output (1% THD), 129mV to give 1W into 8 ohms. DC offsets were very low, at +2mV (L) and -2mV (R), though it should be noted that these figures were averages, there actually seeming to be a similar level of very low-frequency noise present.

With the exception of the high-frequency modulation test, which did produce some difference product (at a still low level), the ML No.23.5 is one of the best-measuring amplifiers I’ve had my hands on.

**Conclusion:** In many ways the burstproof, powerhouse No.23.5 is the best Mark Levinson amplifier yet to come from Madrigal Audio Laboratories. It offers a seemingly unlimited dynamic capability, superbly defined and extended low frequencies with all the speakers I used it with, and though it offers less soundstage depth than I think to be correct in absolute terms, this can be compensated for by careful choice of loudspeaker. Likewise, its rather forward upper midrange should not be problematic with loudspeakers that are not themselves similarly balanced. It proved a better match tonally with the KEF 107 than the Wilson Watt/Puppy, for example, though its sound driving the latter was never less than enjoyable, particularly in the authoritative manner with which it took hold of the system’s mid–upper-bass region. Highly recommended—a true high-end amplifier.

**Goldmund Mimesis 8: $6400**

The Swiss Goldmund company is perhaps best known for its turntables, but recent years have seen them introducing a line of amplification and digital playback components, as well as an idiosyncratic line of loudspeakers.

To judge from the Mimesis 8, Goldmund walks its own way when it comes to power amplifier design. High-end solid-state amplifiers from US companies like Krell, Mark Levinson, Threshold, and the Jeff Rowland Design Group marry massive power supplies to large numbers of output devices (these often heavily biased to run in class-A), built on chassis of such nonmagnetic materials as aluminum. By contrast, the Mimesis 8 has a magnetic (steel) chassis, and uses a relatively modest power supply, that for each channel based on two main 4700μF reservoir capacitors. The 8 offers just two pairs per channel of complementary output MOSFETs (Hitachi K134/J49). These carry

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4 Goldmund, which also owns the Stellavox tape recorder company, is perhaps unique in the high-end field in that it has no design staff of its own. Instead, it subcontracts the creation of its components to highly talented outside consultants.
a modest bias current of around 80mA total. Goldmund’s Michel Reverchon has explained in the past\(^5\) that he feels a small, "fast" power supply to be optimal in that power is taken from the AC line, “not the power supply,” while a publicity sheet for the Mimesis 8 mentions that “low-value filter capacitors are used to avoid the detrimental slowing effect of most power supplies.” We shall see from the auditioning whether this unorthodox approach better serves the music, whether the amplifier has that essential “swing.”

Looking inside the Mimesis 8, AC power enters at the left rear of the chassis, with a separate ground post tied to the ground pin on the IEC AC receptacle (the main chassis ground is also adjacent), and is taken via a fuse to a small vertical printed circuit board attached to the two power switches. To turn the beast on or off, both switches must be pressed simultaneously, which activates a relay on this pcb and illuminates a green front-panel LED. AC power feeds a shielded module behind the front panel which contains two toroidal transformers, one for each channel. This module feeds rectified DC voltages to the single main circuit board, this double-sided and carrying the circuitry for both channels, physically well separated. There appear to be two separate sets of voltage rails per channel: ±65.2V for the output stage, smoothed by the pairs of 4700µF capacitors mentioned earlier; and ±76V, which then appears to be regulated to ±72V, for the input and driver stages, this filtered by six 470µF capacitors.

Looking at the signal path, each channel is carried on a loosely twisted pair from its RCA/XLR socket to the main board, where what looks like some kind of hybrid circuit provides the voltage amplification. There are said to be no capacitors in the signal path, and no electrolytic caps anywhere near the signal path. (A pedant, of course, would point out that the power-supply reservoir caps appear electrically in parallel with the signal path.) The two pairs of output devices per channel are mounted on an aluminum bar that runs the entire width of the pcb and is in thermal contact with the exterior heatsink fins. (This bar is drilled to take a third pair of devices for each channel.) Again in contrast to American "muscle amp" philosophy, where solid bus bars are used to define the ground point between the positive and negative filter caps and to take both DC to the output stage and the output signal to the sockets, the Mimesis 8 relies on what appears to be 16-gauge wire for the latter, with the ground point defined by a wide pcb track. The output sockets themselves are good-quality 5-way binding posts. Again contrary to "audiophile" practice, a small air-cored inductor appears to be in series with the loudspeaker output.

The input sockets comprise both RCA and XLR types, but this shouldn’t be taken as meaning that the Mimesis 8 has balanced inputs. Pin 2 of the XLR is wired in parallel with the RCA jack, while pin 3, which would normally handle the antiphase input signal, is connected to ground. If a balanced source is connected to the Goldmund, the amplifier will only process the "hot" signal, tying the "cold" to ground, meaning that the benefits of balanced working—such as the rejection of common-mode noise—will not apply.

In essence, the Mimesis 8 conforms absolutely to Commander Harrison’s mid-'50s dictum that an amplifier be "simple and straight-

forward in design in the interest of minimizing performance degradation." Does it offer anything in the way of sophistication?

The Mimesis is extensively protected against fault conditions. The two voltage rails for each channel have a series fuse—when one opens, its red "Fuse" LED lights on the front panel—while protection circuitry mutes the output if either a DC offset or ultrasonic oscillation appears on the input, also turning the green LED red. A thermal sensor on the heatsink also mutes the output if the heatsink temperature exceeds 90°C (194°F).

The Mimesis 8 incorporates Goldmund’s thinking regarding “Mechanical Grounding.” The 15kg power-transformer block and the output stage and heatsink are mounted on two and one carpet-piercing cones, respectively, which are said to provide a "vibration evacuation path" for spurious mechanical signals. The chassis itself is mechanically decoupled from these feet by Teflon insulators. Much attention has also been paid to the amplifier’s electrical grounding arrangements. The benefit of these techniques is the reduction of noise to astonishingly low levels (as was revealed by my measurements—see later).

All things considered, the enigmatic Mimesis 8’s design is a mixture of the sophisticated and the mundane.

**Sound:** The Mimesis 8’s cone feet penetrated the rug to the *saltillo* tile-on-concrete floor beneath so that the benefits of Goldmund’s mechanical grounding would not be obscured. For the comparison sessions, either the Mark Levinson No.23.5 or the Classic 60 sat on top of it, which I felt would not compromise its performance due to the electromagnetic screening of its steel chassis, but other serious listening was performed with it sitting alone. Goldmund points out in the user’s manual that the sound of the amplifier is very dependent on the polarity of the AC plug. I experimented with this, using a two-pin cheater with the large pin filed down, and as I seemed to get the more musical sound with the power amplifier grounded and the preamp floating, this ground was achieved by running a separate ground wire from the Goldmund’s grounding post to the wall socket.

It proved impossible to use the Mimesis 8 with the Line Drive, due to RF interference, so all auditioning was done with the YBA 2 pre-amplifier. The sound of the Mimesis 8 seemed extraordinarily subject to setup vagaries. Often I would embark on a listening session only to find that the sound was more threadbare than I had previously experienced. It turned out that I had made a minor change somewhere in the system and knocked the Goldmund away from its optimum position. In general, whenever the Mimesis sounded too lean or threadbare, then, as sure as amps is amps, something would not be right. The following descriptions of the amplifier’s sound only apply to those times when everything seemed to be optimum. They also apply when the amplifier was fully warmed up; it seems to take about an hour to reach a sonic plateau after first turn-on. (Goldmund says that the critical circuitry needs to reach about 55°C for the best sound.)

In the paraphrased words of J. Gordon Holt, “get the midrange right and all else is gaslight.” (I *think* that’s what he said.) Well, the Mimesis 8 certainly gets the midrange right. The CD re-release of Jacqueline du Pré and Daniel Barenboim performing the Brahms cello sonatas (EMI CDM 7 63298 2) virtually sang with the amplifier driving the WATT/Puppies, the cello’s dark woodiness being reproduced with vivid presence yet without being thrust forward into the listener’s lap. The feeling of two instruments hanging in the air, the cello slightly in front of the piano, was uncanny. The Wilson speakers nearly always manage to disappear sonically, but with the Mimesis 8, there wasn’t even a Cheshire smile left to show where they’d been.

The same was true of a superbly real-sounding CD of the viola versions of the two Brahms clarinet sonatas that I bought on impulse from the Berkshire Record Outlet6 (Bridge BCD 9021). No way could the viola’s characteristically weak-fundamentaled tone be mistaken for either a small cello or a large violin. And again, the Mimesis-driven WATT/Puppies hung the instrumental images unambiguously between and behind the loudspeakers with an excellent degree of palpability.

This sense of spatial realism was repeated with Stereophile’s *Intermezzo* LP. Again the Steinway just hung at the end of the listening room, while throughout the midrange, its

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6 Berkshire Record Outlet Inc., Rte. 102, Pleasant Street, RR1, Lee, MA 01238-9804. Tel: (413) 243-4080. Fax: (413) 243-4340. Their catalog is a treasure trove of recordings you’d never find anywhere else.
sound was deliciously true to what I remembered from the Santa Barbara church where we made the recording. And the individual sections of the choir in my *Dream of Gerontius* recording in the unaccompanied passages were superbly delineated in space, both set the right distance back behind the loudspeakers and differentiated from each other. Again that sense of the midrange being right: those voices were grain-free and real-sounding; the brushed-cymbal “tizzing” in this work was close to perfect, as were the brass and violin sounds (amplifiers often get one right but not the other).

This strongly positive impression was modified somewhat by an occasional feeling that the lower mids were a little on the lean side. There was also a very slight degree of grain in the high treble—the MOSFET “mist?”—as well as a general softness in the bass that remained a constant feature no matter what loudspeakers and source material I played. There was plenty of low-frequency weight, the Mimesis 8 not lacking when it came to extension. It is said to be a DC-capable amplifier, after all. But the mid—upper-bass region seemed to lack definition. Yes, the WATT/Puppy has a slight problem in this very same region—the “hump,” as Sam Tellig calls it—but it was accentuated with the Mimesis in the chain. It was least disturbing on piano recordings, but the instrument’s left-hand region was always softer both than I would have liked and than it should have been. And too often on complex orchestral music, with both the KEF and Wilson speakers, bass instruments lost definition as they got louder, their sounds merging overmuch.

Overall, while the Goldmund had reasonably good dynamics, when there wasn’t too much or too complex bass energy, it didn’t reflect the music’s need for power in the same authoritative way as the Mark Levinson and Krell amplifiers.

**Comparisons:** With a deeper soundstage than that presented by the Mark Levinson No.23.5, a softer, more appealing low treble/upper midrange—the Enigma synth’n’chant recording became somewhat more listenable—the Mimesis 8 had a lot going for it. That generally much less well defined bass, however, counted against it to a significant degree on music possessing high levels of low- and upper-bass energy. The first track on Simple Minds’ *Amsterdam* 3” CD (Virgin SMXCD 6), for example, “Let It All Come Down,” has the synth bass line dominating the mix. Via the American amplifier, it made musical sense, the hyped mix conveying a good sense of power and weight. But via the Mimesis, it degenerated into mud, the amplifier apparently losing control of the WATT/Puppies in this region, the result being a loss of the essential sense of drive.

Now you might well point out that it’s a little unfair for a reviewer to use $17,500 worth of amplification and loudspeakers to reproduce such an exaggerated and unsophisticated rock recording. It’s hardly likely that prospective Goldmund owners want to spend that sort of money to play Simple Minds recordings. Well, they might, but more important, I regard the role of the high-end component reviewer as being analogous to that of someone who tests cars. A Mercedes owner may never hang the tail out and use the gas pedal to point the car in the right direction, but the reviewer should do so on the test track, to see where the car’s ultimate limits lie. The *Amsterdam* EP is my test track.

Compared with the Krell KSA-250, which I feel has less well-defined lows than the Levinson, the Goldmund’s bass was still nowhere near being in the same league. Even in comparison with the Audio Research Classic 60, which is not one of the primary amplifiers turned to by bass freaks, the Mimesis 8 offered bass frequencies that were softer and less well-defined. And while the Swiss amplifier was less lean than the Classic 60 driving the Wilsons, it was slightly outclassed in the image depth and palpability departments, and not that much better in its handling of musical dynamics.

**Measurements:** The Goldmund’s rated power specification leaves me a bit puzzled, as it is an unusual, current-limited amplifier that delivers the same output power into 2, 4, and 8 ohms. That this is not true of the Mimesis 8 is shown by fig.9, which plots the distortion and noise against output power for a 1kHz signal into 8, 4, and 2 ohm loads with one channel driven. The 1% distortion point was reached at 185W into 8 ohms (22.7dBW), 260W into 4 ohms (21.1dBW), and 305W into 2 ohms (18.8dBW), revealing rather a higher power-supply impedance than the Levinson No.23.5. With both channels driven, the 8 and 4 ohm power dropped to 170W and 245W, respectively, while the wall voltage dropped to 110V for the 2-ohm/one-channel and 4-ohm/two-channel.
While not the equal of the Mark Levinson or Krell amplifiers when it comes to voltage source behavior, the Mimesis 8 gives out more power than its specification would imply. (The tests...
maximum 8 ohm power of 185W is equivalent to 54.4V peak, well above the specified maximum voltage swing.)

Fig.10 shows the manner in which the THD and residual noise change with signal frequency, again into 8, 4, and 2 ohms. The two channels are somewhat different in their behaviors: the left channel can be seen to be a little more linear than the right below 2kHz, into 8 and 4 ohm loads; the right channel, however, has less of a rise in ultrasonic distortion products. The left channel only is shown into 2 ohms; the amplifier is less happy than the Mark Levinson No.23.5 with extremely low loads. These tests were done after the one-hour preconditioning period, during which the distortion dropped to about half of what it was when the heatsink was cold. (The heatsink was far too hot to touch at the end of this time.) Repeating the tests with the amplifier’s heatsinks at a somewhat lower temperature gave a slightly different result, implying that the Mimesis 8’s nature will be rather signal-history-dependent.

As well as there being more distortion in the top audio band than below it, the nature of that distortion was different also. At very low frequencies, the predominant distortion was third-harmonic, as can be seen from fig.11, which shows the spectrum for a 50Hz tone at 72W into 4 ohms. This was at a minuscule -75dB (0.02%) level, however, while even lower amounts of fifth (250Hz), sixth (300Hz), and eighth (400Hz) can be seen. Note the absence of power-supply-related components, despite the relatively small size of the output stage reservoir caps. In the midband, the distortion becomes more complex, though it remains at a very low level. The lower trace in fig.12 shows the THD waveform with the 1kHz fundamental notched out (equalling 0.007%) at a 100W into 8 ohms level, while that in fig.13 shows the distortion waveform for a 20kHz waveform at 1W into 8 ohms. (The amplifier’s protection circuitry cut off the output at levels much higher than that.) The trend of the changes shown from fig.11 through fig.13 is to replace what is predominantly third-harmonic with second-harmonic as the frequency rises. I have no idea what the subjective consequences of this are, but it is interesting that the amplifier’s fundamental behavior seems related to the signal’s spectral content, as well as its history, and the load impedance.

This dependency also applied in a small way to the output impedance: assessing this by measuring the voltage drop at a 1W level when an open-circuit load was replaced by an 8 ohm resistor gave a figure of 0.04 ohms at 20Hz and 1kHz. Repeating the measurement using a 4 ohm load, thus demanding twice as much current, gave a figure twice this, at 0.08 ohms. Though this is still inconsequential, it puzzles me, as does the fact that at 20kHz, the discrepancy was smaller, at 0.12 ohms (8 ohm load) vs 0.15 ohms (4 ohm load).

Looking at the spectrum of products produced when the amplifier reproduces an equal mix of 19 and 20kHz tones (fig.14) reveals excellent behavior. Note, however, that this was performed at a lower output level than usual, 20V p-p rather than 48V, into 4 ohms. This was due to the fact that the Mimesis 8’s protection circuit cut off the output above this level.

The Mimesis 8 was the quietest amplifier I have experienced. Referred to a nominal 1W into 8 ohms, the audio-band was not weighted, 22Hz–22kHz—lay 112/109dB (L/R) down. To give an idea of what this means, when the amplifier is cruising with an output of 10V, the noise added by the amplifier is just one millionth of that figure, at 10µV. Given the fact that Goldmund’s own loudspeakers are extremely sensitive, this low noise was probably an essential design goal. Both the 10kHz squarewave (fig.15) and the small-signal frequency response (fig.16) revealed a reasonably wide-band nature, the bass being flat to infrasonic frequencies and the treble being a negligible -0.05dB at 20kHz. This, however, was into 8 ohms. Into 4 ohms, the output dropped to -0.2dB at 20kHz, this again indicating some interdependency between the amplifier’s intrinsic behavior and the external conditions. Though not shown, the response with the amplifier hooked up to the Wilson WATTs measured -0.5dB at 20kHz. Correlating with this evidence that the HF response was not as unlimited as the specification would imply, the risetime, judging from the 10kHz squarewave shown in fig.15, was significantly higher than expected at 4.4µs vs 0.7µs.

Channel separation is specified as being greater than 100dB. I could only get near this figure by plugging a shorted RCA plug into the undriven input. With the amplifier connected as for conventional use, with both channels’ inputs connected to the Audio Precision’s outputs, the crosstalk turned out to be much

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higher than I would have liked, lying just below -40dB across the band. This was confirmed in the listening room, a clean version of the music being audible from the undriven channel's loudspeaker with the driven channel hooked up to a dummy load. Though -40dB is probably just too low in absolute terms to affect image width—I failed to note any image narrowing with music signals—it is still somewhat alarming.

The Mimesis 8's voltage gain when loaded with 8 ohms was a little lower than usual at 25.2dB. This implies an input of 2.1V to give maximum (1% THD) output, 155mV to give 1W into 8 ohms. The input impedance via the RCA or pin 2 of the XLR measured 47k ohms at 1kHz. DC offsets on the outputs measured -34mV (L) and -30mV (R), which is sufficiently low.

To sum up the Mimesis 8's measurements, they reveal an amplifier surprisingly good in some ways—low noise and intermodulation, good power delivery into higher-impedance loads—coupled with behavior that seems somewhat disturbingly related to the signal and its history, and to the nature of the output load. I was also disturbed by the high crosstalk between channels under normal use and ground conditions. An enigma.

**Conclusion:** "Enigmatic" is the right adjective to describe the Goldmund Mimesis 8. Whereas similarly priced high-end amplifiers like the Mark Levinson No.23.5 or Krell KSA-250 will give what they have to give under all but exceptional conditions, the Mimesis 8 is more restrictive. When optimally set up, it can afford its owner glimpses of sonic heaven. That magic midrange! That excellent soundstaging, closely approaching that offered by the outstanding Audio Research Classic 60. But only with the right loudspeakers—sensitive, with a highish impedance and overdamped bass alignment—and with the right kinds of music: small-scale instrumental classical music or acoustic jazz; well-recorded classical piano; and voice recordings. In general, the more complex and more dynamic the music and the more demanding it is in the bass range, the less satisfying the Mimesis 8's sound will be in the long term, I feel.

Can I recommend this Goldmund, therefore? Only to those prepared to meet its demands. I would conjecture that, in the context of an all-Goldmund system, it would probably sing and swing. But as a general-purpose, high-end power amplifier? Not really, unfortunately, especially as its price can't help but reflect the current weakness of the US dollar.

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**JM LAB MICRON LOUDSPEAKER**

Dick Olsher


Dimensions: 11.8" (300mm) H by 7.6" (194mm) W by 8" (202mm) D. Internal volume: 6.6 liters. Weight: 5 kg. Serial numbers tested: 9432993 & 9432994 (first samples), 1160387 & 1160388 (second samples). Prices: $554/pair (black vinyl), $628/pair (wood veneer), $941/pair (black lacquer). Approximate number of dealers: 14. Manufacturer: JM Lab, Division of Focal, BP 201, 42013 Saint-Etienne Cedex, France. Distributor: Keats & Associates, 14038 Tanglewood Court, Dallas, TX 75234. Tel: (214) 243-5905. Fax: (214) 620-0083.

Let me take you back some 40 years to the mono days of the early '50s. It's unlikely that the minimonitor genre of loudspeakers, of which this French JM Lab is a prime example, would have survived back then. There was the practical problem of available amplifier power. The average amp could squeeze out no more than 10 to 15W into an 8 ohm load—far less power than the typically insensitive minimonitor demands for adequate dynamic headroom. But that in itself would not have sufficed to displace the minimonitor from the marketplace. After all, "high-power" amps (50-watters) could be had at a price.

The most obvious reason for supposing that the minimonitor wouldn't have had a snow-
ball’s chance in hell of survival is that it was premature for its time. Imaging excellence is one of its primary reasons for being. With mono ruling the day, there would have been no opportunity for it to show off its imaging skills. Other than a few experimental stereo recordings, commercial program material was all in mono. To be sure, there was an intense interest in stereo because of a growing disaffection with mono’s limitations. The late James Moir said it best in 1952: “. . . no competent critic would consider that the best possible monaural reproduction of anything but a soloist could be mistaken for the real thing, and until we can deceive most of the people for most of the time there is room for improvement.”

Moir went on to describe how a concert-hall orchestral stage of some 100’ by 30’ is compressed in size and strangled to emerge from a hole 8” or 10” in diameter. When a significant slice of hall reverb is captured, a mono recording is capable of reproducing a depth perspective, but all sound movement across the stage is reproduced as movement in depth. The soundstage is thus collapsed to a tunnel. Desperate audiophiles resorted to the next best thing to stereo, namely “fat mono.” This consisted either of two spaced speakers reproducing the same mono channel or a single speaker reflecting its sound off of one or more walls. Some years ago, J. Gordon Holt related to me his first stereo listening experience. With tears in his eyes and presumably plenty of goosebumps, he realized then the exciting horizon of stereo. There was no going back for him.

But there’s a less obvious third strike against the minimonitor that, in my opinion, would have counted for much more back then: the minimonitor’s general inability to satisfactorily portray a large orchestra’s tonal balance. Tonal balance conviction meant a hell of a lot more to the old guard, probably because they were exposed to much more live music than today’s audiophiles. Instead of the modern love affair with extreme treble and ultra-low bass, the emphasis was on the midrange, specifically the integration of the power range of the orchestra with the rest of the midrange. To these ears, orchestral conviction is compromised without a tonally accurate upper bass and lower midrange. The body of a cello, the “blat” of a tuba, and the warmth of a hall are all emaciated by a speaker that is tonally tilted toward the treble.

Again, I raise JGH as a shining example of the old guard. During the last decade he has grown increasingly irritated at what he perceives as infatuation on the part of the “audiophile” with imaging and detail. These attributes of reproduced music are not primary on JGH’s list. He would often vent at me that he was a music lover, not an audiophile, and that he was losing touch with the typical audiophile. The ProAc Tablette, which received rave reviews elsewhere in the mid-’80s—and even a sympathetic nod from me (in Vol. 7 No. 4)—was completely lost on JGH. He was appalled that anyone could endorse such a tonally inaccurate speaker; clearly he thought that I had gone off the deep end.

Live music simply does not sound bright and lean. Perhaps we have all overdosed on electronic music. Is this the root cause for the public’s recent appetite for bright sound? Because that’s exactly what the industry is dishing out. I find many recent speakers to be emphasized in the treble. Overly etched and zippy HF seems to be selling.1 Couple that with a lean lower midrange and you end up with a lean, mean speaker that; no matter how well it images, I

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1 Bright speakers sell well in the low-fi and mid-fi arenas, probably because they compete so effectively for the attention of the buyer in the dealer’s sound room. With little more than his TV and his in-car system as a reference, and certainly almost no live musical experience, it is quite easy for the novice to fall prey to those speakers that scream the loudest. Don’t you make that mistake.
would take pleasure in booting out of the listening room.

The Micron
JM Lab is quick to point out that "Micron" strictly refers to the speaker's "microbian size"—its internal volume is a mere 6.6 liters—and that in fact it is conspicuous by its "giant" musical reproduction. The edges of the front baffle are tapered, which helps break up the usual monotonous minibox look. My samples were finished in walnut veneer, which further enhanced the elegant look. There should be little spousal objection to such cute little things. The driver complement consists of a 5" dual-voice-coil Neoflex midrange-woofer and a Kevlar-diaphragm tweeter, the Focal T90K. (This is precisely the same tweeter that gave me so much grief during my Vol.13 No.10 review of the Focal Aria 5 loudspeaker.)

Preliminaries
The phono front-end consisted of the Aura turntable, Graham Model 1.5 tonearm, Rowland Complement cartridge, and the Threshold FET-tenite preamp. The Theta DS Pre and Cary Audio processors were used with all digital program material. A bridged pair of Classé Audio DR-8 amps were used most of the time. The Microns were positioned atop 24" Chicago Speaker Stands and located about a third of the way into the listening room from the rear wall—at what has proven to be the optimal minimonitor imaging location.

It did not prove necessary to listen to the Micron considerably off the tweeter axis, because the lower treble did not really sound bright. However, to alleviate an extreme treble peak, it proved beneficial to toe-in the speaker until the tweeter axes crossed in front of the listening seat.

Sonic impressions: first sample
At no time could I completely relax and enjoy the music with this speaker; two flaws kept gnawing at me. First, the upper mids, from around the crossover region at 4kHz through the lower treble at 8kHz, were consistently grainy and dry, sounding irritatingly rough. At its best, track 12 of the Audio Arts CD (Grundig MD&GL 3522) can be gloriously expansive. J.S. Bach's "Komm, Jesu, Komm" was tailor-made for sopranos, and on this recording they soar sweetly and naturally across the soundstage. With the Micron, however, I was hard pressed to discern any residual sweetness in the sopranos' upper registers. Instead of fleshing out the natural sheen of female voice, the Micron substituted a rough, parched textural quality.

The Lesley Test, track 13 of the Stereophile Test CD, suffered a similar fate. Textures sounded dry, and Lesley's vibrato was not well resolved. Another favorite soprano of mine, Juliane Baird (Dorian DOR-90126), also underwent the Micron treatment: the ripe tonal quality of her upper registers became slightly raspy! Hall reverber was somewhat indistinctly reproduced, so that it became difficult to precisely locate Juliane within the soundstage. She was sort of to the left of center on track 9, but I had no better than a vague idea as to where her diaphragm and throat were.

Adulterate the upper mids, and another obvi- ous timbral casualty is the violin. For example, Itzhak Perlman's violin overtones (Bruch's Violin Concerto, EMI ASD-2926) sounded so dry and lacking in sheen that any reference to a live instrument lost credibility.

Misa Criolla (Philips CD 420 955-2) was reproduced within a wide and transparent soundstage, and instrumental outlines were decently focused. Dynamic shadings were also captured with a semblance of bloom and linearity, at least from soft to loud. Very loud passages, however, were noticeably strained and compressed. The Micron, in general, did not fare too well on orchestral music. Wagner's The Flying Dutchman (German EMI 7-634492), with José Van Dam as the Dutchman and Karajan at the helm of the Berlin Philharmonic, was badly served by the Micron's emaciation of bass lines. The problem wasn't so much the lack of any deep bass below 65Hz, but rather the reduction of upper-bass and lower-midrange energy. This was the Micron's second big problem.

The Micron's tonal balance was too lean to preserve the weight and power of a large orchestra. But even on intimate music, the lower registers lacked conviction. Bach's Sonatas for Viola da Gamba and Harpsichord (Simax CD PSC 1024) were clearly and negatively affected. The body of the gamba was diminished, and the harpsichord lacked a healthy dose of natural brilliance. Male voice was also affected. Eric Bibb's chest (River Road, Opus 3 CD 8017) was diminished, as was baritone John Shirley-Quirk's (Walton, Belshazzar's Feast, EMI SAN-234).
Treble transients were not well-controlled, sounding a bit smeared. The quality of the treble, in general, was rough, too prominent in the extreme treble, and lacking the airy delicacy of live music. Imaging, on the whole, was pretty good. Massed voices were well-resolved, and outlines were delineated with good focus—at least most of the time. But with all of its problems, I found it difficult to get excited about the Micron's imaging.

On the basis of its elegant façade, I expected great things from this miniature transducer. Alas, that from the mouth of a babe such disappointing sounds could emerge is indeed a tragedy.

**Sonic impressions: second sample**

This particular review underwent an unusually long but unintentional gestation period (over a year) for reasons that had to do mostly with overload at my end and gruelling publishing schedules. As with the Vieta minimonitor that I review in the next issue, the speaker was revised during this unfortunately extended period. After I had submitted the text of my review, JA felt it fair to request a second pair of Microns more representative of current production from the new US distributors.

My 1990 Focal Aria 5 review made my feelings about Focal's T90K tweeter a matter of public record. The main thrust of my objections to the sound of this tweeter had to do with what it did wrong in the lower treble and upper mids, where I felt that its sound had the textural equivalent of sandpaper. That Focal was determined to do something about the situation became evident from discussions I'd had with both Joe D'Appolito and Kimon Bellas of Focal America. I was told of forthcoming factory improvements to the T90K, which was to be recycled with at least a couple of internal modifications. These would include venting of the pole piece and damping of the back wave to eliminate reflections and thus provide much-needed smoothing of the upper mids and lower treble.

Thus, I was conditioned to expect that the latest version of the Micron would simply incorporate an improved Kevlar tweeter. Peeling away the grilles, there was, to my surprise, no Kevlar to be seen! The tweeter was still of the inverted-dome variety, but the diaphragm material looked suspiciously like titanium. In fact, the back of the tweeter was stamped with the designation "T90T1."

While I applaud JM Lab's technological quest for sonic perfection and their right to alter the design without notice, a complete change-out of one of the drivers clearly goes beyond a simple tweak or iteration of an existing design. To my mind, a revision of this magnitude qualifies as a new model introduction. So, in a sense, what follows are listening impressions of a product I had literally not heard before.

To say that the new Micron was nothing at all like the old one would be an understatement. What a transformation! The titanium Micron pulled the rug from beneath almost everything I've said about the Kevlar version.

Driven by an expensive tubed amp (the VAC 90W monoblocks operated in triode mode), the tonal balance struck me as quite reasonable for a minimonitor. That is, still too lean through the lower-mid and upper-bass regions, but evincing sufficient textural warmth through the lower mids to give orchestral music reasonable conviction. Bass extension was decent, and the upper mids were remarkably smooth. Massed strings actually sounded sweet, and the treble was detailed without being bright or etched.

Large-scale orchestral material was reproduced with a tonal and dynamic conviction that I've rarely heard from a minimonitor. Horowitz's inspired reading of the Dvořák Symphony 9 (Chesky CD31) bloomed within the confines of a wide and spacious soundstage. Bass lines were reasonably potent. The lower mids were as full-bodied as any minimonitor design would allow. There was lots of detail being resolved without gratuitous etch or sizzle. The extreme treble sounded open, and treble transients were well controlled. The contrast from soft to very loud was quite remarkable for a little speaker.

The body and soul of a cello, so often emasculated by your typical minimonitor, was given plenty of expression by the Micron. Bruch's Kol Nidrei (ebs 6060) retained much of the cello's body along with the tension and drama of the music. Massed strings sounded luscious. Offenbach's Suite pour Deux Violoncelles (Harmonia Mundi 901043), with Etienne Peclard and Roland Pidoux, came through sweetly and with wonderful spatial presence.

String tone in general sounded smooth and sweet. Arthur Grumiaux's violin overtones (Mozart: Violin Concerto in A, Philips 412 250-
2) were inherently sweet, without even a hint of grain or screech.

Stereophile's Test CD provided some very instructive moments. On track 7, one of JGH’s recording masterpieces, the chorus in full voice remained under control without that obtrusive bright edge that so often permeates lesser speakers’ upper registers. (Folks, if this track gives your system any trouble at all, rest assured that the problem is in your system.) Anna Maria Stanczyk’s confident playing of the Chopin Scherzo in b-flat, Op.31 (track 10) was accorded plenty of dynamic room and tonal accuracy. The piano’s upper range was smooth, without that jangling, jarring tone common to bright speakers. Finally, the Lesley Test (track 13) was reproduced with very good focus and timbral accuracy. Lesley’s upper registers sounded a bit dry, but that’s exactly how the CD compares to the master tape. Although the recording was made in a fairly dry acoustic (Stereophile’s listening room, with additional Sonex panels around the mike position), the master tape possesses a much greater sense of immediacy and warmth by comparison with the CD.

The Micron was able to punch through the soundstage veiling that I find endemic to inexpensive loudspeakers, making the resolution of hall sound quite easy for the listener. A prime example is Dorian’s Greensleeves (DOR-90126) with Julianne Baird. The Troy Savings Bank Music Hall afforded Ms. Baird the opportunity to float phrases and then harmonize with the hall reverb. This interplay of direct and indirect sound adds considerably to the charm of the music. The Micron exposed these intricacies effortlessly. Also, Julianne’s upper registers sounded smooth, her image outlines nicely focused within the soundstage. All of which brings me to the topic of reproduction of female voice.

Cleo Laine’s image (Live at Carnegie Hall, RCA LPL1-5015) was nicely focused, with very good transparency. Her upper registers were texturally smooth and well-behaved, without spit, sizzle, or sibilant emphasis. To be sure, the slight brightness inherent in the recording came through, but without added exaggeration. Anna Moffo’s singing of selected arias (RCA LSC-2504) is truly a thing of beauty. I find her upper registers to be a mesmerizing, irresistible melange of timbral velvet and purity. The Micron took care of Anna’s upper registers with tender loving care.

Walton’s Belshazzar’s Feast (EMI SAN-324) gives the chorus plenty of dynamic headroom. Although the Micron sounded a bit strained when the chorus was in full voice, it behaved reasonably, sparing me the screeching and shouting some speakers evince on this sort of program material.

During LP playback, it was easier to push the Micron over the edge of comfort in terms of dynamic contrasts; in general, it sounded more labored than when playing CDs. Woofer-cone pumping was noted, indicative of the speaker’s inability to deal with subsonic garbage. Such behavior is typical of all such bass-reflex designs with highish box resonances, where the woofer is unloaded in the deep bass and afforded no damping or protection from large subsonic excursion. Use of a good subsonic filter with this speaker would be worthwhile, especially for analog playback.

In two important ways, the sound of the new Micron reminds me very much of that of the Celestion SL600Si (which admittedly I haven’t auditioned for some years). The performance of the much more expensive Celestion is nearly equated in terms of lower-midrange transparency and imaging precision. Overall, I would easily take the Micron over the Celestion; the Micron’s tonal balance is much more realistic. (I have little patience for the Celestion’s laid-back midrange and closed-in treble.) In contrast to the dark-sounding Celestion, the Micron is neutrally balanced through the midband, and as a bonus comes equipped with an open-sounding treble that seems like a burst of sunshine after the Celestion’s dark cloud. The Micron also sounds more dynamic and not so obviously congested through the midrange. This is especially important for the realistic reproduction of wide-range orchestral works.

JA adds some measurements

Figs.1 & 2, made with the Audio Precision System One, show the impedance amplitude and phase of the first and second samples of the JM Micron, respectively. Both drop to just below 4 ohms in the upper bass, the overall impedance being nearer to a 6 ohm specification. The tuning of the ports is revealed by the minimum at 60Hz in both graphs, suggesting a relatively restricted bass response. As might be expected from the different tweeters, the manner in which the impedances vary with frequency are very different in the treble. The sensitivity,
assessed with an octave-wide band of pink noise centered on 1kHz, was around 88dB/W/m, which is high for a mininitor.

Turning to the time domain, figs.3 & 4 show the impulse response of the two speakers on the tweeter axis. Note the significant amount of complicated high-frequency, presumably audible ringing imposed on the tail of the Kevlar-tweetered speaker's impulse (fig.3). The titanium dome (fig.4) is much better behaved in this respect and what ringing there is has been pushed above the audio band.

To the right of fig. 5 is shown the response of the original Micron on the tweeter axis, averaged across a 30° lateral window. The ugly behavior of the Kevlar dome tweeter above 14kHz is well-documented. Of more importance, however, is the region an octave to either side of the 4kHz crossover point. The uneven low treble is evident, as is the poor integration of the drivers on this axis. This is presumably the root cause of the timbral errors noted by DO. To the left of fig. 5, the nearfield low-fre-

![Image of Figure 1](image1)

**Fig.1** JM Lab Micron, sample 1, electrical impedance and phase (2 ohms/vertical div.)

![Image of Figure 2](image2)

**Fig.2** JM Lab Micron, sample 2, electrical impedance and phase (2 ohms/vertical div.)

![Image of Figure 3](image3)

**Fig.3** JM Lab Micron, sample 1, impulse response at 1m (5ms time window, 30kHz bandwidth)

![Image of Figure 4](image4)

**Fig.4** JM Lab Micron, sample 2, Impulse response at 1m (5ms time window, 30kHz bandwidth)

![Image of Figure 5](image5)

**Fig.5** JM Lab Micron, sample 1, anechoic response on tweeter axis at 1m averaged across 30° horizontal window (with mike response subtracted), and nearfield response of woofer and port.

![Image of Figure 6](image6)

**Fig.6** JM Lab Micron, sample 2, anechoic response on tweeter axis at 1m averaged across 30° horizontal window (with mike response subtracted), and nearfield response

![Image of Figure 7](image7)

**Fig.7** JM Lab Micron, sample 2, horizontal response family at 1m, normalized to the tweeter-axis response, from back to front: reference response; anechoic response 7.5° off tweeter axis; 15° off-axis; 30° off-axis

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quency responses of the Micron's woofer and port are approximately matched to the averaged on-axis response. The woofer can be seen to roll off below 120Hz, with the port output centered on 60Hz, as suggested by the impedance measurement (fig.1)—DO's in-room measurements yielded a bass response that was flat to 65Hz at the listening seat.

Fig.6 shows the identical curves for the second sample of the Micron. The new titanium-dome tweeter lacks both the top-octave rise and the ragged low treble of its Kevlar-domed sibling, which explains why DO was so much more enamored of its sound. The level matching between the quasi-anechoic midrange and treble curve and the nearfield woofer and port curves can only be approximate, yet the indication was that the woofer of the second sample, despite its impedance plot and port tuning being almost identical to the first sample's, actually gave a little more upper-bass energy (this is why I've raised its level in fig.6). Certainly DO felt the second sample to sound warmer than the first, and considerably better at reproducing the body tone of the cello and the power region of the orchestra.

Looking at how the balance changes with listening axis, there were only minor changes with the measuring microphone moved from an axis level with the center of the woofer to one level with the top of the cabinet. Above that, however, a significant suckout appeared in the crossover region, suggesting that the JM Lab should definitely be used with tall stands,

![Fig.8 JM Lab Micron, sample 1, cumulative spectral-decay plot](image1)

![Fig.9 JM Lab Micron, sample 2, cumulative spectral-decay plot](image2)
24" probably being the minimum unless you have a very low listening chair. The horizontal behavior is shown in fig. 7, with good, even dispersion up to 10kHz, and a decline in output off-axis above that frequency. This kind of radiation pattern is typical of a good monitor and undoubtedly contributes to the excellence of its soundstaging. (It isn’t all that contributes, however: the ragged low treble of the first sample will have smeared the imaging in this region.)

The MLSSA “waterfall” plot of the original Micron (fig. 8) reveals that the sonic signature of the Kevlar tweeter is quite obvious as a series of strong resonances above 14kHz. A major dip in the amplitude response is evident around 4kHz, with other resonant problems noticeable at 1.4kHz and in the crossover region. The waterfall plot for the second sample (fig. 9) is still rather hashy in the low treble, but confirms the overall more even balance of the titanium tweeter in this region.

—John Atkinson

**DO summarizes**

The JM Lab Micron is one small speaker that I could live with. It transcends some, though not all, of the limitations of the minimonitor genre. There is no deep bass to speak of, and the midbass is perhaps a tad lean, but the lower mids are dynamic and harmonically quite convincing—at least with a tube amp. The upper mids are sweet and texturally smooth. The treble is detailed and quick without being etched in flavor or obtrusive in nature. At its asking price of about $600/pair, the Micron offers a performance/price ratio well above that of the competition. In plain English, this is one hell of a bargain.

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**PHASE TECHNOLOGY**

**PC-90 SUBWOOFER**

Robert Harley


In the January issue I reviewed the $650/pair Phase Technology PC-80 loudspeakers and found them to offer good performance for their modest price. The PC-80s are solidly built (1"-thick cabinet), attractive (real wood veneer), and had some special musical qualities not normally found at this price level. In particular, they had smooth tonal balance and the ability to throw a large soundstage with pinpoint images. In fact, the PC-80s were one of the best-imaging speakers I’d auditioned in my listening room. My primary criticism, however, was their underdamped bass. They had deep extension for such a small speaker, but the bass lacked definition and detail. It was somewhat sluggish, making the bass appear to lag behind the rest of the music. In view of its overall performance, however, the PC-80 earned a Class D recommendation in *Sterophile’s* "Recommended Components."

In their response to my review, Phase Tech raised several points. The first was that by measuring the PC-80 with the grille off, some frequency-response bumps were seen that are not there with the grille on. Contrary to the implication in the manufacturer’s response, however, all the auditioning was performed with the grilles on. Phase Technology also complained that I failed to mention their subwoofer, the $550 PC-90, made for use with the PC-80s. Since I liked the PC-80 quite a bit apart from the bass presentation, they suggested I audition the PC-90/PC-80 combination. This report is thus a mini-review of the PC-90 subwoofer, with a new set of measurements on the PC-80 with its grille on.

The PC-90 is 15½" wide by 16½" high by 20" deep and finished in real wood veneer. Available finishes include light oak, dark oak, black, or walnut. The unit rests on four feet, which can be extended with four supplied plastic parts for installation on heavy carpet. The downward-firing woofer is a 10" unit made by Phase Technology and incorporates their solid,
flat piston driver technology, dubbed RPF (Rigid Polymer Foam). The enclosure bottom has four pairs of gold-plated knurled posts for connection to an amplifier and the satellite speakers. A toggle switch allows the user to attenuate the high-pass output signal to the satellites by 3dB.

The internal passive network nominally crosses over at 90Hz and has 12dB/ octave slopes, which results in effective 18dB/octave rolloffs when combined with the drivers' acoustic rolloffs. Inductors are ferrite-core types, and capacitors are Mylar bypassed with polypropylene types. The 1"-thick MDF enclosure is internally braced. Sensitivity is 88dB (2.83V at 1m), the woofer impedance is 6 ohms, and the -3dB point is reportedly 27Hz. The PC-90 weighs 57 pounds and can be used with a variety of loudspeakers besides the PC-80.

Listening
I auditioned the PC-80/PC-90 combination driven by my usual reference system: VTL 225W Deluxe monoblocks, Audio Research SP-11 Mk.II preamplifier, and a Well-Tempered Turntable with an AudioQuest AQ 7000 cartridge stepped up with an Expressive Technologies SU-1 transformer. The digital front end was a Wadia WT-3200 driving the Audio Research DAC1 D/A converter via a glass-fiber interface. Interconnects were AudioQuest Diamond and Lapis, while speaker cable was AudioQuest Dragon (VTls to PC-90) and AudioQuest Sterling (PC-90 to PC-80s). Stands were the spiked and lead-shot filled 24" Celestion SLs, which placed the PC-80's tweeters 36" off the floor, exactly at ear level. The PC-80s were more toed-in than during the first auditioning, their axes crossing about 4' behind the listener. I positioned them 51" from the rear wall and 33" from the side walls. The PC-90 was centered between the PC-80s, about 35" from the rear wall.

In the course of evaluating the PC-90, I also listened to the Infinity Modulus active subwoofer ($2000, reviewed by JA in Vol.13 No.11) and the Muse Model 18 active subwoofer ($2500, which I reviewed in July). Although both products include amplification and are far more expensive than the PC-90, they nevertheless provided a basis for comparison. Other small loudspeakers on hand for use with the PC-90 included the JBL XPL-90 and Mordaunt-Short MS 3.30, also reviewed in the July issue.

I'd spent the previous seven weeks listening to the Muse Model 18 subwoofer with the Hales System Two and System Two Signatures, a tough act to follow. It was immediately apparent that the PC-90/PC-80 combination was in a completely different league from the Muse/Hales. I found the presentation lackluster and uninvolving. Though the upper bass region sounded thin and lacked body, there was sufficient output in the bass (30–80Hz) to give the presentation a somewhat boomy character. Attenuating the high-pass signal by 3dB with the switch helped, but not enough to give the presentation enough upper-bass meat.

This leaness, coupled with a low-frequency boom, was an unpleasant sensation because the presentation's low-frequency component seemed detached and not musically related to the rest of the music. In addition, the bass lacked any sense of bounce or dynamics, making the presentation seem "flat." I don't use this word in an amplitude vs frequency sense, but to convey an undynamic, cardboard-like character. The entire low-frequency region sounded pinched and constricted, robbing music of life and vitality. To top it off, there was virtually no sense of pitch: individual bass notes all seemed to have the same tonality.
Remembering how much I liked the PC-80s, I was surprised at how uninviting the presentation was. I was also concerned that I was being overly critical of the PC-90 after living with the superb (and nearly five times the price) Muse Model 18 subwoofer. I thus disconnected the PC-90 and listened to just the PC-80s.

What a difference! I experienced something I hadn't felt with the PC-80/PC-90 combination: enjoyment of the music. The PC-80s were far more musical and involving on their own than with the PC-90. The bounce returned to the bass, along with some sense of pitch, and the entire presentation took on a lively, unfettered quality. Although there was more extension and weight with the PC-90, the bass it produced detracted from rather than enhanced the presentation. After spending two days the previous week auditioning 10 pairs of low-cost loudspeakers, I gained a new appreciation for the PC-80s; they're well-balanced little speakers.

But back to the PC-80/PC-90 combination. What bothered me most about the PC-90 was its inability to resolve pitch. The bass was featureless and did nothing more than add a tubbiness to the presentation. Listen, for example, to the repeated acoustic bass figure about a minute into the second track on Dave Grusin's *Discovered Again* album (Sheffield CD-5)—individual notes are barely distinguishable. In addition, the bass had no delicacy or nuance, instead sounding synthetic. This was especially apparent during passages in which the bass plays the melody along with another instrument (on Roland Vasquez's LP *Urban Ensemble*, Arista/GRP-5002, and the Dixie Dregs' "Hereafter," for example). Through the PC-80s alone, or with the other subwoofer mentioned, the bass was a distinct entity with clearly defined pitch. Without being able to hear individual bass notes, the music became uninteresting. That foot-tapping, head-bobbing enthusiasm just wasn't there.

I next listened to the PC-80s with the Infinity Modulus subwoofer crossed over at 90Hz. This was a big improvement; dynamics and pitch resolution returned, and I felt the Infinity improved on the PC-80s' performance. This combination also provided a better sense of body in the midbass, with more palpability, and a roundness and warmth to low-frequency textures not heard through the PC-90. The powered Infinity also added new dynamics and punch to the lowermost octaves.

After installing a 100Hz crossover card in the Muse Model 18, I auditioned the PC-80s with the Muse. With the three records cited above, for example, the bass was clearly audible as a distinct instrument that made a melodic contribution. A roundness and liquidity returned to the bass, and there was a sense of detail to the lower registers. The 100Hz crossover point seemed ideal for the PC-80s, keeping intact their superb imaging and smooth tonal balance. I was quite surprised, in fact, at how good a sound the Model 18/PC-80 combination produced.

After a week without listening to the PC-90, I returned to it but with no better results. I tried phase-inverting the satellites to see if the hole in the mid- and upper bass would fill in. This helped in fleshing out a sense of body, but the presentation became a little bloated and unpleasant. In addition, it didn't help resolve my main problem with the PC-90, its thumpy character in the low bass. The impression reported with the PC-80s held true with the Mordaunt-Short MS 3.30: lack of dynamics, a lumpy quality in the low bass, and poor resolution of pitch.

**Measurements**

Fig.1 shows the PC-80's FFT-derived anechoic response, measured over a 30° lateral window with the grille on. The 2.5kHz peak is still apparent, but is lower in amplitude than that seen in my original measurement made with the grille off. This suggests, as I stated in the PC-80 review, that the grilles should be left on for listening.

Looking next at the PC-90, fig.2 shows its impedance magnitude and phase. The high-pass circuit was loaded with an 8 ohm resistor for this measurement, producing the flat line at 8 ohms above 2kHz. The sealed-box tuning can be seen by the single resonance peak at about 23Hz. The impedance drops below 4 ohms only over a very narrow band, suggesting the PC-90 will not present a difficult load for an amplifier.

Combining the PC-90's high-pass crossover slope with the nearfield woofer output produced the plot in fig.3. (The high-pass curve was made with the circuit loaded by a 4 ohm resistor.) Note how the signal fed to the satellites rolls off slowly below 1kHz, while the woofer's output rolls off more steeply and at a lower frequency. This will produce a depression in the overall acoustic output between

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100Hz and 800Hz. Indeed, this confirms the listening impressions of a hole in the upper bass. Fig. 4 is the FFT-derived 1/2-octave smoothed in-room response of the PC-80/PC-90 combination, measured at seven points near the listening position and averaged to reduce the effects of room-induced anomalies. Although the dip at 60Hz and peak at 80Hz are room effects (they also appear on the Muse Model 18/Hales Signature in-room response in Vol. 14 No. 7), the range below 300Hz is a little lumpy in relation to the Muse/Hales plot. There is also less energy in the three octaves between 100Hz and 800Hz, along with a greater dip in the lower treble.

The -3dB switch attenuated the signal at the high-pass outputs by 3.85dB at 5kHz. With the switch in the “0” position, the high-pass crossover’s insertion loss was 4.6dB, also measured at 5kHz. Driving the PC-90 with a variable-frequency sinewave oscillator revealed the enclosure to be sturdy and solid, though there were buzzes at 80Hz and 100Hz, and the enclosure vibrated slightly at 45Hz.

**Conclusion**

Despite its low price and the fact that it did increase the PC-80’s low-frequency extension, I cannot recommend the Phase Technology PC-90 subwoofer. I found it detracted from rather than enhanced the PC-80’s performance, this observation holding true for the other loudspeakers auditioned with the PC-90. The PC-90’s lean midbass and lumpy low bass provided an unnatural balance that was hard to ignore. In addition, pitch was poorly defined and dynamics were lacking.

I can, however, reiterate my recommendation for the PC-80: it’s a good little speaker. Those who find themselves wanting more extension and better LF definition than the PC-80 offers would be better off, in my opinion, spending their money for a full-range system like the Vandersteen 2Ci, which is identically priced—$1195—to the Phase Technology speaker/subwoofer system.
Threshold SA/12e, S/550e, & Jeff Rowland Design Group Model One power amplifiers

When JA asked what I'd like to review for the September issue, I responded immediately that I had some unfinished business to attend to. When I reviewed the Threshold SA/12e monoblock (Vol.13 No.12) and Rowland Model One (Vol.14 No.4) stereo amplifiers, I left a few threads hanging. I'd promised a follow-up comparing the big Thresholds with one of that company's less pricey (though still far from cheap) stereo amplifiers, and I had yet to try a pair of Model Ones bridged as monoblocks. Hence this update.

Associated equipment used here included the Wadia WT3200 transport and X-64-4 D/A converter (CD was used as the primary program source for these listening tests), Rowland Consonance preamplifier, and Apogee Stage and PSB Stratus Gold loudspeakers. Both pairs of loudspeakers were bi-wired using Symo cable. The CD processor—preamp link was via AudioQuest Lapis. The pre—power amplifier hookup was balanced Cardas Hexlink.

Threshold SA/12e vs the S/550e: After a period of listening to the SA/12es driving the Stages, my initial reaction on switching over to the S/550e (reviewed by RH in Vol.14 No.1) was one of familiarity. In no way was there any dramatic sonic change. But there were differences, which became clearer over time and in listening to the same program material over both amplifiers. The biggest difference was in the degree of focus and immediacy to the sound. What was perhaps surprising was that here the S/550e came out on top. It had the greater punch and "palpability," along with superb overall clarity. The SA/12e was just a bit softer and sweeter—less incisively detailed and sparkling. On the Swingle Singers' new CD Around the World: A Folk Song Collection (Virgin Classics VC 7 91207-2), the interplay of the *acapella* voices was alive with energy and very much in-the-room with the stereo amp. Imaging was sharply defined, and the bass vocal solo on "Sakkjarven Polka" was striking. The more expensive monoblocks, in contrast, were just a shade less up-front and less tightly focused—a bit more relaxed, if you like it, or a bit less "there" if you don't. Both amplifiers were, again, still recognizable as members of the same sonic family.

On Leo Kottke's *That's What* (Private Music 2068-2-P) the sound of the S/550e was precise and pristine—detailed yet with a slight warmth. The perspective was still forward and present, yet not overdone. Percussion was sharply defined yet not clinically spotlighted. The 12es, on the other hand, were sweet and clean, yet perhaps because of this very sweetness they seemed to subtly soften the leading edges of transients and "slow" the subjective dynamics. The S/550e had more "standability," a quality which extended down into the bass. Though the overall bass weight of both amplifiers was quite similar—I wouldn't choose one over the other on that basis in driving the Apogees—the generally more hair-trigger quality of the upper overtones of bass instruments through the S/550e made that amplifier seem to have the tighter low end.

To determine if the S/550e's more prominent top end would be a plus or a minus over a different loudspeaker, I set up the PSB Stratus Golds in the listening room. The PSBs were chosen for this audition not only for their overall high quality, but also because they have a rather different set of strengths and weaknesses from the Apogees. They are subjectively more extended at the top end than the Stages—on occasion a bit too much, as I said in my review in Vol.14 No.2—along with having a more extended (though not more powerful) low end. They lack the Stage's viselike midrange grip, but are otherwise open and relatively uncolored through that region.

The Threshold stereo amp was easily up to the challenge. Its midrange was vibrant and lively, its low end tight where required, explosive when called for. The soundstage, though definitely up-front, still exhibited a very effective sense of depth, and the lateral focus remained sharp. While I've rarely heard a true case where the loudspeakers "disappear" into the soundstage, this combination provided a reasonable approximation of that ideal.

The S/550e's incisive—though not, in my judgment, overdone—top end only ran into a bit of trouble over the PSBs with program
material clearly recorded and mixed with too much sizzle on top. I suspect the moderately elevated response of the PSBs in the top octave, together with the Threshold’s hang-ten response in the upper range! simply add up to a bit too much of a good thing on less than pristine program material. We’re talking of a bit too much added zip here (which I do not credit to the amplifier), not major-league sizzle (unless you happen to be addicted to the early recordings of the Bubble Gums). But I’d advise caution in combining the S/550e with other equipment having a “hot” top octave. It is a superbly clean- and open-sounding amplifier, yet I would not describe its top end as “sweet” or in any way euphonic. The SA/12es, in contrast, do have a trace of sweetness, trading a bit of the excitement generated by the stereo amplifier for a slightly more refined, subtle quality, particularly in the treble.

Overall, then, a surprising result. Though I’ve used the SA/12es extensively to drive the Apogees, I was certainly satisfied with them in that situation, and also used them as primary amplifiers in my reviewing of the PSB Stratus Golds, I have to say that I found myself marginally preferring the S/550e for driving both of these loudspeakers—with the reservations discussed above. If the S/550e lacks a trace of the SA/12es’ subtle refinement, and it does, then it more than makes up for it with a more visceral, gutsy, tighter sound. I take back nothing that I said in my review of the big monoblocks, and they may very well win a face-off when driving loudspeakers in the stratospheric price category. But I would by no means assume that to be the case; no one in his or her right mind, in any event, should contemplate any amplifier in the price category of either of these Thresholds without first hearing them in the system in which they will be used.

Bridged Rowland Model Ones: I’ve spent a great deal of time listening to the Rowland Model One over the last several months, both before and after my review of it in Vol.14 No.4. It remains a remarkable amplifier: full-bodied, even slightly lush, but in a completely believable, natural fashion. It lacks a bit of “speed” and liveliness, but makes up for them with a disarming unforced quality. The Model One has plenty of detail which it never throws at you, preferring to convince with a subtle insistence, never letting itself sound ruffled, processed, or “Hi-Fi.” It lacks a bit in power capability, but only on the rarest of occasions have I wished for more.

Bridging a pair of Model Ones and using one per channel in a “monoblock” configuration ups the power quotient considerably. By Rowland’s own specs, a bridged Model One will put out 240W into 8 ohms and 360W into 4 ohms; it’s also rated at 500W into 2 ohms. So there certainly should be no question as to the power-output sufficiency of a pair of these amplifiers. And considering their power rating, they form an extremely compact, manageable pair of monoblocks.

Using the same associated components employed in the Threshold comparisons (above), with the Apogee Stages in place, I found that the sound of a bridged pair of Rowlands was not at all dissimilar to my experiences with a single amplifier driving the same loudspeakers—despite a recent change in the room’s acoustic treatment. The slight softness remained, and the Rowlands continued to refuse to sound biting or harsh under almost any reasonable circumstances with good program material. They produced the same seamlessly liquid sound I had come to appreciate from a single Model One—bridging did not appear to add any hardness or edge to the sound. Ambience reproduction was still convincing, and voice reproduction remained glorious—rounded and dimensional and very much “there” in the room. The soundstaging of the bridged pair of Rowlands continued to be as well-defined and involving as a single unit. GL has briefly tried the Rowlands bridged through the Mirage M-3s, which lately have become rather difficult to dislodge from his listening room. He found the pair of Rowlands to be somewhat more laid-back than a single, unbridged Model One. I can’t say I found this to be a factor in my auditions of the bridged amplifiers through the Apogee Stages (or through the PSBs, for that matter).

The unbridged Model One has a slightly soft, though no means inadequate, low end which

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1 The surf sound tied to a tree and visible over the back fence behind my office window, still waiting for Santa Fe’s Monster Wave no doubt, is now largely hidden by the summer’s foliage, but its presence must have somehow warped my subconscious.

2 The addition of a number of RPG Diffusers and Abfuzzers and removal of the wall of Distech absorptive foam from behind the listening position is discussed in my article on room treatment and the Stereophile listening room in the next issue.
is carried over into the bridged configuration. Through the Apogees, I found the bottom octaves of the paired amplifiers to be strong and detailed, but never hair-trigger tight or awesome. Recall that in my review of the Adcom GPA-565 monoblocks (Vol.14 No.6) I had noted that in low-frequency extension and power, those amplifiers had seemed almost scary at times through the Apogees, making me fear that I might do permanent damage to the Stages in a moment of carelessness. Even though the Rowlands are rated to put out over 400W into the Apogee's 3 ohm load, I never got quite the same feeling of nearly unlimited power from them. To be fair to the Rowlands, however, no other amplifier has given me quite that same sensation either, not even the big Threshold SA/12e monoblocks.

Driving the PSB Strauss Gold, a slightly different picture emerged. Listening to a pair of bridged Rowlands directly, without comparison to a single, unbridged amplifier, the reproduction impressed much as above, within the context of a very different-sounding loudspeaker. The sound now lacked the often startling midrange presence of the Apogee Stages, and could not match the latter's oomph in the bass—drum region of the bass, but in compensation PSB's flagship had the greater apparent depth, top-octave extension, and air, and plumbed perhaps 10Hz or so deeper into the bottom octave. The harp glissandi on Spirituals in Concert (DG 429 790-2)—something of a mixed bag musically but with several magnificent cuts and a generally pleasing sonic perspective—goriously combined unforced detail and textural subtlety. Voices were embedded in a beautifully natural acoustic space (Carnegie Hall, in this case). The sound was decidedly less rich than it had been through the Stages, but the sweetness of the Rowlands was still in evidence. I did note, however, a slight glare, which only appeared near crescendo levels, in the lower treble just below the top of the soprano range—a quality which had not been evident through the Apogees. Nor had I noticed it to quite the same degree with the Threshold S/550e driving the PSBs.

The advantage in sheer drive offered by bridging a pair of Model Ones was definitely evident through the PSBs. Perhaps it had been less evident through the Apogees because that loudspeaker's near-3-ohm impedance across practically the entire audio band converts even a single Model One into an over-150Wpc amplifier, which is not exactly low power. The PSB's impedance, on the other hand, while falling close to 4 ohms across a broad swath of the lower midrange, rises significantly at higher and lower frequencies—a common characteristic with most conventional, cone-type loudspeakers. In any event, when I closely compared the single Model One with the bridged pair, there was no question about the latter's superiority in the sheer gutsiness department.

A most convincing demonstration of this was the soundtrack from They Live (Enigma 7 73367-2). This recording's sound is no more natural than the sound of an elephant trying to play a kazoo, but it is stunningly punchy. A single Rowland amplifier was just a shade too polite here. A bridged pair tossed the PSBs around the room in a more convincing fashion, and definitely made this recording come to life in a way that the single amplifier could not.

But on more subtle program material, the solo Model One had a degree of greater sonic refinement than the bridged bruisers. Less evident over the Stages, this came across on the PSBs as a subtly more delicately shaded top octave, with a bit less brightness in the lower treble. The latter was particularly evident on recordings which already have a bit too much output in this region (such as Leo Kottke's My Father's Face, Private Music 2050-2-P, a recording I otherwise enjoy for its combination of lyrical qualities on the solo guitar cuts and bizarre quirkiness on the vocals).

Since I was also doing a considerable amount of listening to the Threshold S/550e during this same period, and since the S/550e costs virtually the same as a pair of Model Ones ($6,500 vs $6,200), invidious comparisons between the two seemed only fair. I freely admit to having had a difficult time in making these comparisons. The amplifiers (and I hereafter mean a pair of bridged Rowlands, unless otherwise stated, when I refer to the Rowland or Rowlands) definitely did not sound the same, yet, as in all things audio, neither is perfect; there are tradeoffs in choosing either one.

Driving the Apogees, the Rowlands were, in general, subtle, liquid, and slightly softened around the edges though they did not seem to

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obviously lack for detail. The Threshold, on the other hand, was up-front and vivid (RH's use of this term in his review was apt), alive and lively yet never taking those qualities "over the top." On Ensemble Alcatraz's Danse Royale (Elektra-Nonesuch 79240-2), a superbly natural gem of a recording of 13th-century French, Anglo-Norman, and Latin songs and dances that was one of those wild, lucky, "I have no idea what this is but it looks interesting" picks from the CD browsing bin, the Rowlands presented the slightly sweeter sound, with a tad more depth and a better feeling of front-to-back perspective. They also won out on voice, the liquidity and three-dimensionality of which the Threshold could not quite match. The latter, however, was subtly but clearly more up-front and immediate, with a more incisive quality to the instrumental work and percussion that generated a more exciting overall sound. I could live with either, but on this particular recording I leaned toward the Rowlands, perhaps because I value vocal reproduction so highly.

On the Swingle Singers' Around the World: A Folksong Collection the result was generally the same, although I missed in the Rowland a vibrancy that the Threshold brought to the festivities. On the other hand, the Threshold pulled ahead when a punchier, more detailed sound was called for. "The Siege of Justiceville," from They Live, had tremendous cut and thrust with the Threshold. The Rowlands, while still as gussy with this recording as I described them above, had a somewhat softer quality—just as much "grip" but less "bite." The latter is called for in this piece, and its lack reduces somewhat the impact of the recording. The same was true on The Pugh Taylor Project (DMP CD-448). This studio recording's miking may not be "purist," but the overall sound quality is of top audiophile caliber. Musically, it's fascinating and decidedly unusual, one of those "you have to drive it to believe it" recordings. The Rowlands handled this recording superbly, but their slight lack of incisiveness next to the Threshold—less crisp, though I hesitate to use that word because it might conjure up images of a negative quality which the Threshold does not possess—was a minus with this music. The S/550e was a clear front-runner on this recording, with sock, detail, and focus. The Rowlands were, again, just a bit too soft for this hard-driving, dynamic material.

My impressions remained generally the same with both amplifiers driving the PSBs. Here, as I've already stated in my Threshold update, the S/550e did occasionally "sparkle" just a bit too much on top (in combination with the sometimes slightly toppish but otherwise excellent PSBs), but on most good material that simply lent a pleasing quality of air and extension.

Overall, then, I feel that the bridged Model Ones are a punchier version of the single stereo amplifier. The pro side is a decidedly more muscular quality, of value on some loudspeakers and some program material. On the con side, I noted a small but undisturbing loss in high-end delicacy and refinement when bridging the amplifier. Still, a pair of Model Ones is certainly a less massive and backbreaking route to monoblock status than most similarly powered amplifiers, especially of the single-chassis, stereo variety. Since in most respects they sonically resemble the single amplifier, and since the latter already has decent power capabilities for those whose demands for sound-level output are of the domestic sort, my recommendation, if you find the Model One's sound qualities as natural and appealing as I do, would be to go with the solo Model One first. If you later feel the need for more get-up-and-go, you can always add the second unit. But you will have then put yourself into the realm of the big-buck, socko, power-gushing amplifiers, and here I have to say that the bridged Rowland Ones do face stiff competition from competitively priced and powered stereo units.

Addendum: I can't leave a discussion which includes the PSB loudspeakers and the Rowland Model One amplifier without taking both manufacturers to task for their terminals. In the case of the PSBs, several of the terminals loosened enough over time that they rotated when tightened. On two of the terminals, the plastic cap stripped off completely, necessitating the use of pliers to loosen the metal nuts remaining—not an easy proposition considering the fact that the terminals themselves were loose—and rendering further use of the loudspeakers difficult at best. (Fortunately this happened after I'd completed the above review.) In the case of the Rowland, additional output terminals have stripped and become useless since my review. Again, only the presence of redundant terminals (designed for bi-wiring) have kept the amplifier functional.

—Thomas J. Norton

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In the early morning light we crossed the Golden Gate Bridge and traveled northward through the lovely communities of San Rafael county. In one of these, San Anselmo, an unusual and remarkable event had been planned for half-past nine on Friday, March 23 in the Music Pavilion of San Domenico High School, a resident and day-school administered by the Dominican Sisters of San Rafael: Sir Yehudi Menuhin was on his way there to direct a String Symposium.

More than 150 string students of Marin County and the Greater Bay Area, with their teachers, had gathered together for a three-hour session with one of the world's greatest musicians, who began learning the violin in San Francisco just 70 years ago. That he should have survived being a child prodigy ranks as sufficient a miracle in this tense and demanding age of ours, but that he should in addition have remained pre-eminent as a world citizen, a violinist-conductor, and an extraordinary human being invites a willing suspension of disbelief.

Yet he was there to disprove disbelief by meeting those American youngsters and by listening to them as soloists, ensemble players, and orchestra members. He wanted to talk to them about their art, help them in their struggle for perfection, and conduct them finally as a body—a fascinating philharmonic phalanx of string players and music lovers ranging from about 8 through 18 years of age. They gave him a warm welcome and, at the end, a well-deserved ovation. They had come into contact with a true maestro, in the old Italian sense of the word: a teacher.

The Symposium began with a tripartite Master Class, continued with eight Ensemble Demonstrations, and had for its conclusion the Intrada from a Concerto Grosso by Ralph Vaughan Williams, originally written for massed orchestras from the Rural Music Schools Association performing in London's Royal Albert Hall in 1950. And there was a link with England in the very first item—the first movement of Dvorak's "American" Quartet, for the youngsters who played it so warmly and so well had been coached by Colin Hampton, cellist of the Griller Quartet, all four of whose members had settled in Berkeley many years ago. He was there to hear his protégés and to listen, as we all did, to Menuhin's words of commendation and his powerful advocacy of chamber-music playing as a sure path to higher musicianship.

There followed two redoubtable and richly caparisoned warhorses, their metaphorical riders being two young ladies of oriental background and considerable talent. Lu San played the opening movement of Tchaikovsky's Concerto in D, and Lisa Lee the Allegro molto appassionato of the Mendelssohn E minor, both with Natasha Neff at the piano.

The Master's comments were clear and concise. He took the students to the window, as it were, but refrained from describing the scenery. What he did describe was the state of mind most conducive to a great interpretation: a feeling of extemporaneous, almost gypsy-like playing in the opening measures of the Tchaikovsky, and a sense of nervous and breathless urgency in the Mendelssohn. Again and again he asked for the beginnings—the notes that would make an immediate and indelible impression on audiences. The young ones seized on his advice and their music sounded all the better for it. A change of approach transformed the Tchaikovsky, while a slight change in bowing for Mendelssohn's passionate appeal made a palpable and audible difference to the meaning of the phrase as a whole.

Variety being the spice of music as well as of life, the program continued with demonstrations by ensembles whose ages ranged from the very young to the more mature. If the babes played tentatively, the seniors showed splendid panache. It was even possible to sense the growing pains of these violinists as one ensemble succeeded the other and progress became apparent in such matters as self-assurance, introduction, bowing fluency, and musicianship.
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all eight excerpts, the standard of the music selected remained high. We heard no mush—only Mozart, Handel, Telemann, Vivaldi, Purcell, Bach, and a folksong arrangement. Colin Hampton contributed and conducted a composition of his own, and his chamber orchestra responded with enthusiasm.

After each item, Menuhin offered helpful comments delivered with the gentle voice and firm conviction of a true artist. Avoiding negative criticism, he chose instead to bolster the positive aspects of the symposium, pointing out time and again the joyous appeal of music-making and the message which the great composers can still communicate to us. His general approach reminded me very much of his rehearsals, in which a quiet voice ("they listen more intently if one doesn’t shout"), strong guidance, and a nice blend of wit and learning convince everyone of his deep love and respect for art and life.

The finale was certainly grand, for the nine orchestras joined together under his baton for a sonorous performance of the Ralph Vaughan Williams intrada, a massively proportioned movement reminiscent of his better-known Fantasia on a Theme of Thomas Tallis. I silently called to mind a four-part vocal setting by Tallis, perhaps dating from about 1542, of an admonition to the young people of his own day and country: "You tender babes of England, shake off slothfulness, set wantonness apart, apply your wits wholly to learning and virtue, whereby you may do your duty to God and your king [Henry VIII], make glad your parents, profit yourselves, and much advance the common weal of your country."

On that March morning some of the young people of America were giving ready proof of their own powers of concentration, doubtless making their parents happy, improving themselves, and adding to their country’s reputation as a home for the arts despite the sorry state of music in most California schools. But San Domenico is an exception in many ways, for it has a student body of 150 girls (half of them live on campus) representing a wide variety of national, social, and religious backgrounds. Their curriculum is well-balanced and their teachers are conscientious and dedicated. Music has always played an important part in the life of the school, and its students have won many prestigious awards. Under the guidance of Faith France, the present Director of Music, the program continues in its determined progress toward even higher goals. This is no less true of the other participating groups and schools, for they too enjoy enlightened encouragement and consequently show through their work the excellence of their several teachers.

The music over, many of the teachers and pupils made their way to the luncheon room for speeches and sustenance. We heard from Robert Commanday, critic of the San Francisco Chronicle for the past quarter-century; from Anne Crowden, who runs a school combining an excellent academic syllabus with a full music program; from Carol Dyk, who teaches voice; and from Denis De Coteau, Music Director of the San Francisco Ballet. All dealt cogently with the various problems that beset musicians today—especially young musicians.

The final speaker was Menuhin. (His words are shown below in italics.) He professed a personal yet simple approach to musical education: Music is as much a birthright as air, good water, and language. This, of course, is a high ideal, and like many such it has been consistently betrayed by all who cultivate power, control, and domination. Music cannot be dispensed with: it is inalienable from human existence, for sound is produced by animals too—sometimes very beautiful and meaningful sounds. And the more meaningful it is, the more beautiful and important it is. He went on to say that while the majority make use of music only as entertainment, there are so many levels of musical understanding, yet so many obstacles that stand in the way.

I find that many of the audiences in the United States—even among young people, even institutions of learning—come to a concert with almost no background to understand the music. They haven’t been prepared. Menuhin is not referring to the music of distant centuries, but to music savante (art music) of our

"Many of the audiences in the United States come to a concert with almost no background to understand the music."

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own and recent times. Audiences are not only unprepared historically but also emotionally and aesthetically for what they are about to hear. Musicians are unlikely to become thugs or murderers, and they are unlikely to take drugs or be put in prison. During a New York summer a few years ago, numerous arrests were made at a rock concert in Central Park, but an orchestral concert in that same park three weeks later gave rise to no untoward incident. And speaking of San Domenico School:

The fact is that you have schools like this, where every child is responding to an ideal situation, where the response is heartwarming and the performance quality very high, and there is no reason why this cannot apply to a wider circle. You showed such a sense of social responsibility by inviting so many representatives of education and of music, and the children from the whole Bay region. Music, after all, goes past walls; vibrations connect us with everything that vibrates, everything that lives, everything that exists, and we cannot confine our responsibilities any more than we should confine our music.

Music and mankind suffered under tyrannical regimes such as those of the Nazis and the Communists, and yet German and Russian music is universally loved and respected. I don't think that it's worthwhile pinning upon any particular person or people any particular guilt that makes them outstanding. We see people of every race now behaving in intolerable ways. What we are looking for is what music can give to humanity, not only to the individual.

Music especially can offer much to collective society, such as singing in school, for the very act of singing is basic. It's all very well to encourage the playing of instruments, but our basic instrument is the voice. I've never known a member of a choir who was depressed—I've always seen them as rather good-natured souls. I think that's perhaps your experience too, Denis? I've seen plenty of violinists depressed, simply because it takes so much time to learn how to balance this curious instrument and to play it without fear, without tension. But the voice can be encouraged.

Hymns used to be sung at school every morning, but that practice was long ago discontinued in America (though not in England) because it was considered to infringe the Constitution's division between Church and State. That's nonsense, in my opinion. There are so many chorales, hymns, and chants of all nations and of all times, and through these our children could learn to appreciate other cultures. Music is the only art which enables us to relive the times, the life, the situation, the social conditions, the mentality, the beliefs of a totally different period.

The audible heritage of past civilizations belongs to us, and with this background we can experience continuity. We have an incredible range and assortment of music to enjoy, thanks partly to musicologists and researchers. But there's also pop and rock, which are already loud, and getting louder. Our need to measure things in terms of their usefulness sometimes persuades us that we can measure music in the same way. There is now a mass market for very loud music that has very little content; in fact the louder it gets the emptier it is. Yet some of the popular artists are in a certain way superior to the classical ones because they can improvise: they are playing for the moment. They are communicating directly with the public, which I feel most deeply teachers should do, too.

"Music is the only art which enables us to relive the times, the life, the situation, the social conditions, the mentality, the beliefs of a totally different period."

"Some of the popular artists are superior to the classical ones because they can improvise."

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Romantic music is a dangerous thing. We adore it, we love it; we can fulfill our emotions with it. However, I was so glad to hear the Ricercare of Bach this morning, because there is a discipline of mind, together with a passion. There's mystery: it contains the whole of our highest potential.

I know my first love was Tchaikovsky. But it takes time to develop the understanding for Bach, or for late Beethoven, and as we grow older, that must mean more and more to us. There's another promising feature today, and that is the number of girls and ladies. I've already said some time ago, the orchestra of the future will be one of women, and I'm afraid we men may be partially eclipsed by the brilliant women conductors of the future.

"I'm afraid we men may be partially eclipsed by the brilliant women conductors of the future."

On that note of optimism and prediction the Symposium came to a close at twenty minutes to three. But the day was not yet ended, for after the drive back to San Francisco and the necessary time for rest, there was an evening lecture to give and the second in a series of three concerts at Davies Symphony Hall, which was the main reason for Menuhin's journey. He had already rehearsed with the San Francisco Symphony Orchestra and the soloist, Robert McDuffie, in a program consisting of Haydn's Symphony in B-flat ("La Reine"), Bartók's two Rhapsodies for Violin and Orchestra, and Mozart's "Prague" Symphony. Unable to attend the later events of Friday, I went instead to Saturday afternoon, when an encouragingly large audience had assembled for both lecture and concert.

At the lecture, Menuhin spoke especially of his meeting with Bartók, but always within the greater context of his concern for music in the world today. He is fearless in expounding his views on education, and many who heard him remembered how just ten years ago he had stood before the School Board to appeal for the continuation of the city's school-music program. Now he was drawn to Bartók and his music, speaking with quiet authority on the great composer's last years, which despite near-poverty and suffering brought forth music of unrivaled vitality and power.

He met Bartók for the first time in New York in November 1943, having already played the Second Violin Concerto and the First Sonata for Violin and Piano. He played the Sonata, with Adolf Baller, at the apartment of a friend while the composer listened intently, and his approval persuaded Menuhin to commission then and there a work for violin alone. It was completed in March of the following year, and thereafter became, with Bach's D-minor Partita, one of the two most important violin solo sonatas.

The concert program at Davies Hall also featured music by Bartók—his two Rhapsodies of 1928—the soloist being Robert McDuffie, who toured Europe in 1988 when Menuhin was guest-conducting the Netherlands Chamber Orchestra. The two artists have frequently appeared together in chamber music, and toured last fall with the Warsaw Chamber Orchestra. Enjoying such dedicated advocacy, the Rhapsodies have rarely sounded finer, what with tonal qualities in the violin part inherited from McDuffie's first teacher, who was from Budapest, and a marvelous accompaniment in the unmistakable Bartók idiom from a conductor who knew him and his music intimately.

In the Mozart and Haydn symphonies one heard a profusion of courtly elegance combined with inner flame, as if the true spirit of the 18th century had been realized in performances that settled in the mind and stayed there. Menuhin's gestures are expressive, never flamboyant; and his innate sense of phrasing clearly has a salutary effect on the orchestral musicians, who, despite their heavy schedule of concerts and tours, seem to remain fresh and sensitive when a first-class musician comes to conduct them.

And now for our conversation . . .

Denis Stevens: I believe you know Stereophile?

Yehudi Menuhin: Yes, indeed, and it carries out its appointed task very well besides giving some space for classical CD reviews. I loved your article "Do Musophiles Enjoy Audio?" in the April [1990] issue. It seems to me very much like the desire to buy ever more wonderful cars—faster, more elegant, more comfortable—or, for that matter, watches, when we can get to our destination, especially within city

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limits, even faster on a bicycle and when we can learn the time without necessarily having to buy our sixth watch.

DS: For many years you had an exclusive contract with EMI, and none of us is likely to forget the good that came of this association. Now that you do more conducting and have a choice of companies to work with, I imagine that you enjoy a greater measure of freedom.

YM: Which is a great advantage, for I can explore the music I love while viewing it from another angle—that of the conductor. I especially enjoy working with the English firms Virgin Classics and Nimbus. Recently I have recorded both of Elgar’s symphonies. [Virgin Classics VC 7 90773-2, VC 7 91182-2, respectively.]

DS: Twin masterpieces compounded of demonic fire, mysticism, and nostalgia! For an expatriate Briton like myself, they conjure up a vivid picture of our history, culture, and the actuality of green fields and rolling hills.

YM: Indeed, the whole point about Elgar is his Englishness—that inborn flexibility, subtlety, capacity for adjustment. To some extent his music reminds me of the English weather, which is so varied and can change in a few minutes but never goes to extremes. In its rich variety of tone and color, it’s like the many subtle shades of green you find in the English countryside. In appearance, when I met him, Elgar looked very much like a country squire.

DS: And yet there was a tender, feminine side to his nature. When he attended the Empire Exhibition in 1924 to conduct his specially commissioned March, he stood aside from the crowds at the rehearsal and tried to forget about the noise and confusion. Suddenly he saw at his feet a group of real daisies, and (as he later wrote to a friend): “Something wet rolled down my cheek—and I’m not ashamed of it.”

YM: I can well understand that, for he loved the countryside deeply, and even when he and his wife decided to settle in London they chose Hampstead for their home. After all, we cannot embrace a slab of poured concrete, but we can embrace a tree, and we can feel tender about a flower.

DS: I suppose you could devise an entire series of concerts or recordings based on composers whom you have known personally—and what a long list it would be! Elgar, Vaughan Williams, Walton, Berkeley, and Britten among the Englishmen; Bartók, Bloch, Frank Martin, Enesco, Shostakovich, Sibelius…

YM: True, but when Beecham celebrated his 70th birthday he received telegrams from all over the world. “What!” he said, “nothing from Mozart?” I would have loved to meet Mozart, and play chamber music with him and Haydn! And then Bach, who was the first Romantic to remain utterly devout, and whose inventive powers remained at the service of the purest creation.

DS: In the facsimile edition of Bach’s solo sonatas which you gave me early in 1959, you had written in the Preface that his handwritting showed an extraordinary flow—that he drew his own lines which sometimes had little waves in them, and that he never wasted an inch of space, beginning a new sonata even on the last line of the page where the previous one ended, if there was space. I was much moved by your insight not only into his handwritting but also of course into his music, which I first heard in the recordings you made in the 1930s. Would you say that the actual process of recording was easier or more difficult in the old days?

YM: Sometimes easier, believe it or not. My sister Hephzibah and I once recorded the Beethoven G-major sonata, and I well remember that we played the entire work three times, leaving the producer to choose which takes would actually be issued—that was long before splicing became a possibility.

“In playing or recording Beethoven the violinist should be a medium.”

In playing or recording Beethoven the violinist should be a medium. There is little that is personal or that can be reduced to ingratiating sounds, pleasing slides, and so on. Everything is dictated by the significance, the weight, structure, and direction of the notes and passages themselves. Even the simplest phrases, those which seem little more than scales and arpeggios, reveal their supreme importance once it is realized how crucially they reside within the scheme of the particular work being studied.

DS: And there is so much music to be studied now; so many new compositions rediscovered by industrious musicologists! I suppose we could be blamed to some extent for cluttering

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the stage, yet I've enjoyed many opportunities for bringing to light works that deserve a hearing. Some of the high points in my life have been the programs I contributed to your festivals in Bath, Gstaad, and Windsor.

YM: I remember especially your group of singers, the Accademia, because it was a kind of vocal chamber music—one to a part, like instrumental chamber music, but infinite in its variety. They sang in several languages, and the music came from various countries and epochs. But you weren't able to follow it up?

DS: Well, you see, nearly all vocalists want to become opera stars. I was able to find a group that blended beautifully but had no operatic ambitions. So we explored the repertory, and surprisingly it's much wider than that of instrumental music. The disadvantage lay in its limited appeal—although that was never a problem for your knowledgeable festival audiences. But it was too esoteric to develop, which I much regret, because there was a time when courts and homes throughout Europe resonated with it.

YM: As I said in my address to the Symposium, all schools should ideally start each day with a little choral music—and there's so much excellent material to choose from. Wasn't it an

### Yehudi Menuhin: A selected discography


4. **Bach, J.S., Sonata for Violin & Keyboard in E, with Wanda Landowska (hpd)**, recorded 12/28/44, issued on RCA LCT 1120 ca 1952 (M).

5. **Bach, J.S., Three Sonatas for Violin & Keyboard, with Louis Kentner (pno)**, issued on RCA LHMV 1016 ca 1954 (M).


8. **Bach, J.S., Double Concerto in d, with Christian Ferras (vn)** and Bath Festival Chamber Orchestra, Violin Concertos in a & E, with the Robert Masters Chamber Orchestra, issued 1960 on Capitol 7210.


10. **Bach, J.S., Brandenburg Concertos**, with Bath Festival Chamber Orchestra, recorded 1959, issued 1960 on Capitol GBR 7217 (US), HMV ASD 3278 (UK); Peter Andry, prod. 4

11. **Bach, J.S., Four Orchestral Suites**, with Bath Festival Chamber Orchestra, recorded 1960, issued 1981 on Capitol GBR 7253, Peter Andry & Ronald Kinko André (prods.), Neville Boyling (eng.).

12. **Bach, J.S., The Musical Offering, with Robert Masters (vn)**, Patrick Ireland (via), Nannie Jameson (via), Elaine Shaffer (fl), Archie Canman (bs), and Ronald Kinko André (hp), issued 1961 on Angel 35115 (US), EMI ASD 414 (UK).


16. **Bartók, Violin Concerto 2**, with Antal Dorati/Minneapolis SO, recorded 2/18/57, issued 1959 on

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1. This discography was compiled by Thomas Simone and originally appeared in a slightly different form—I have added CD numbers where relevant—in Vol. 3 No. 1, the Spring 1991 issue of Recollections Quarterly, the record collectors' journal published and edited by Ronald Penndorf. An article by Mr. Simone expanding upon the discography appeared in Recollections, Vol. 3 No. 1, Winter 1990. It appears by permission. Recollections Quarterly costs $60/year and is published by Recollections, 225 14th Street, Berkeley, CA 94710 Tel (415) 546-7786. —JA

2. All recordings are stereo unless indicated by (M). —JA

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**Stereophile, September 1991**
English composer of the Elizabethan era—William Byrd—who said something like: “Sing ing strengthens all parts of the breast, and opens the pipes...”? All young people should learn how to breathe properly. And as you have seen and heard at San Domenico, it is possible to do splendid work in music if the prevailing system of education is a good one. What we still need is enlightened patronage of the arts, and wise deployment of the available funds. I am still surprised that so little good music appears on radio and television, and what one does hear suffers from serious imbalance. Radio programs come entirely from records, and are almost exclusively instrumental, so that few if any songs or choral masterpieces are ever heard. We can only hope for a gradual and all-round improvement, and in this task the efforts of each and every one of us counts for more than we know.

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"I shall never write a symphony," Brahms confided to the conductor Hermann Levi. "You have no idea how the likes of us feel when we hear the tramp of a giant like bim behind us." The "bim" referred, of course, to Beethoven, whose music had at once deeply moved, inspired, yet intimidated the 21-year-old Brahms. It was at that age that he heard the Ninth Symphony for the first time and, catalyzed by the experience, immediately began one of his own in the same key of D-minor. That score ultimately evolved into the composer's First Piano Concerto. A little more than two decades would pass before Brahms completed his Symphony No.1.

The work, to be sure, had a long gestation. For one thing, there were the composer's earlier, highly symphonic orchestral works—the two Serenades and the Haydn Variations. Then, too, Brahms had finished the first three movements of the symphony many years before completing it in 1876. Interestingly, the opening Poco sostenuto was (like the initial chords of Beethoven's "Eroica") an afterthought, tacked on when the first movement had ostensibly been finished. As Sir Donald Tovey so aptly put it, the work, as originally conceived, had "the most abruptly dramatic opening ever attempted."

After its premiere, the score was tagged in some quarters as "the Tenth Symphony"—an obvious allusion to Beethoven and one that, in its paradoxically complimentary yet condescending implications, underscores certain stylistic antithesis on which many of the music's interpretive problems are hinged. On the one hand there is the grand symphonic design, with sonata structure as tautly organized as any in Haydn, Mozart, or Beethoven. On the other is the lushness of thematic material, a seeming stylistic antipode to the symphony's terse Classical scheme. And then there is the question of Brahms's orchestration, once alleged to be clumsy and "thick," but which, with proper guidance from the podium, becomes transparent, colorful, and—most important—a generator of musical sense.

Because the symphony straddles the theoretically opposed worlds of Classicism and Romanticism, it requires honoring a dual ethos. Its melodies must sing, its tone be sonorous, but textures should remain clear, the ensemble be purged of excess weight, with nothing being permitted to cloy. This demands avoiding a throbbing vibrato in the portentous opening and in the second movement's violin solo; securing a sharp profile of the music's rich and highly complex texture; and maintaining a clearly discernible, well-regulated pulse, yet one that has sufficient elasticity to suggest the work's shifting moods without undermining its cohesiveness. And then there is the issue of the first-movement repeat: when observed, it produces a wrenching harmonic leap resulting in good measure from Brahms having purposely disguised (as Beethoven had done in the first movement of the "Eroica") where the development begins. Inclusion of the repeat not only produces harmonic whiplash, it makes the movement too long, and only the
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most rigid fundamentalist will insist on hearing it.

Once the symphony entered the repertory, it became a staple for important occasions, often being the work with which an orchestra opened its season. It is not surprising, consequently, that it received immediate attention on discs, one of the few symphonies to gain (from Weingartner) a complete acoustic recording. Weingartner went on to make electrical versions in 1928 and 1938, both once available in poor LP transfers, the former from Opal, the latter from Columbia and Artisco. Collectors finding these in cutout bins should pursue their curiosity only if a premium price is not asked, superior transfers of each account being likely to appear on CD.

Far more interesting and superbly remastered is a 1927 Stokowski/Philadelphia account (Cameo Classics 9009H), an English LP that may still be found in stores handling imports. Here is the tonal luster of the Philadelphians preserved in sound that is astonishing for its age, revealing a slightly mannered but richly expressive, forward-pressing performance, one that Stokowski in three subsequent recordings was unable to duplicate. Similarly, a 1928 Klemperer performance with the Berlin State Opera Orchestra (Koch Legacy CD-7053) proves far more incisive than the conductor's 1955 stereo version (Angel CD 69551), which, for all its rhythmic rectitude and superbly controlled, well-integrated finale, suffers from a first movement that is unduly protracted and pompous.

Conversely, the weakest of Karajan's six recordings of the work is his earliest—a 1943 effort with the Concertgebouw Orchestra (DG 423 527-2); it is poorly transferred from 78s and painfully mannered in its willful tempo modifications. None of the conductor's subsequent efforts, let it be added, comprise preferred editions, all being rather cool and detached, but some listeners may be seduced by the tonal opulence of his two most recent versions (1977, DG 427 253-2; 1983, DG 413 141-2).

Among other historical editions, those of Furtwängler (Music and Arts CD-289) and Mengelberg (Philips 416 210-2) should be of interest only to specialized collectors. The former (with the Concertgebouw Orchestra) lacks the thrust and tension of Furtwängler’s magnificent 1950 account with the BPO, which DG will probably reissue on CD. Mengelberg’s reading, also with the Concertgebouw, has many exciting moments, but in its frequent gear shifts ruptures the music’s integrity.

Far more commanding are six performances led by Toscanini. Two are studio efforts (1951, RCA 60257-2-RG; 1941, scheduled for reissue in March of 1992 on RCA). Both are fine readings, differing in many details, but sharing a clarity, lean sonority, and propulsive power. The same holds true for a live 1951 Toscanini performance available in a sonically inferior Hunt set of the four symphonies (CD 706), and a fine-sounding video cassette of the telecast on which the performance was featured. Good as these versions are, however, they are no match for three other live ones. Interesting for the ensemble involved is a 1952 effort with the Philharmonia Orchestra, the only one of the six not done with the NBC Symphony. Available in a fairly decent-sounding Hunt set (CD 524) devoted to the Brahms cycle Toscanini led during his last appearance in London, it is valuable for the fullness of orchestral tone—rounder and less coarse than what Toscanini drew from the NBC ensemble.

But the versions that stand out in this group are from 1937 and 1940. The former, contained on a Myto CD (89009) that preserves Toscanini’s debut concert with the orchestra formed expressly for him, is an exceptionally free, improvisational reading with a range of tempos (some unusually slow) atypical of the Maestro. Considering its age and the cramped acoustics of studio 8H, the sound is surprisingly good. Still, it’s the 1940 account (Melodram 18011) that reveals Toscanini at the peak of his powers. Recorded off the air, it was part of a benefit concert that took place in Carnegie Hall and is, quite simply, the most compelling performance of the music I know: free yet firmly controlled, sharply accented and profiled, and built upon plateaus of dramatic climax that culminate in an overpowering conclusion that may leave one breathless. Here, more than in any other performance, is the perfect balance between rhapsodic freedom and a tight rein, and here is a conductor who understands how, in Brahms, themes undergo dramatic transformations as marked as any that may occur in the theater. The sound, if limited on top and bottom, has sufficient presence and color. For anyone interested in this work, this is a performance not to be missed.

Similar to this Toscanini account, if not quite so intense, is a live 1952 Cantelli performance.
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Stradivarius—sued the one Cantell recorded for EMI with the Philharmonia Orchestra (likely to be reissued before long). The sound of this aircheck with the NBC Symphony, aside from a slightly restricted top, is quite serviceable.

Among other historical editions, three, by virtue of the conductors involved, command interest: Szell’s (CBS MYK 37775), Walter’s (Odyssey MBK 44827), and van Beinum’s (Philips 420 854-2). All are stereophonic and all have merit. Yet none does full justice to its respective conductor: Szell’s is sometimes fussy and without the fire he brought to the music in the concert hall; Walter’s, rhythmically tauter than his 1952 version with the New York Philharmonic, lacks that effort’s craggy harshness. Still, this third of the conductor’s three recordings is superior to his mannered account of the ’30s with the VPO (once available on a Vox LP); van Beinum’s reading sounds tepid compared to the white heat of one he recorded for Decca/London in the early ’50s.

Of more recent recordings, those by Järvi (Chandos 8653), Solti (London 414 458-2), and Bernstein (DG 410 081-2) should be avoided. Järvi’s account is poorly recorded, interpretively ponderous, and slack to the point of blandness. Solti musters a bit more thrust, but he, too, cannot generate the intensity the work demands, and his recording is further undermined by a bass-heavy sonority in which texture is blurred. Bernstein’s performance (with the VPO) has the finest sound among these three, but is far less incisive than the one he recorded with the NYPO (currently unavailable but almost certain to be reissued by CBS-Sony); furthermore, the remake is marred by tasteless tempo adjustments that disrupt continuity and structure.

Considerably less wayward, though hard to recommend without qualifications, are the recordings of Boult (Angel 69521), Dohnányi (Teldec 43479), Skrowaczewski (MCA 25188), and Tennstedt (Angel 47029). Boult was one of the unsung giants of this century, a conductor of taste and temperament if without the flamboyance and charisma of some of his peers. The Brahms cycle he recorded for EMI is generally distinguished, but its 1 may prove too cool and reserved for some tastes. Still, in its understated directness, it holds up well to repeated hearings, its only major flaw being the inclusion of a first-movement repeat.

There can be little question of Tennstedt’s commanding position, and his performance has a kind of monolithic intensity heightened by a pointing of detail that yields welcome textural clarity. But some may find his account too expansive and limited by an antiseptic detachment that neutralizes the music’s emotional wallop. Dohnányi’s 1, like Boult’s, is the weakest reading in a generally distinguished cycle. He secures, to be sure, superb playing from the Cleveland Orchestra, but his broad tempos tend to inflate the score with the pompous formality that its severest (and ill-advised) critics have claimed for it. The same might be said of Skrowaczewski’s account, which has some lovely moments, but—with its prevailing breadth and occasional tempo modifications—does not quite coalesce.

Sir Donald Tovey once noted that “it is the nature of a work of art to be itself,” by which I assume he meant that we cannot set down inviolate rules to which creativity must conform. I raise this issue because the point seems equally applicable to musical interpretation. To be more specific, despite my preference for a thrustful, aggressive approach to 1, the readings of Sanderling, Giulini, and Horenstein manage, through a number of compensatory features, to make a good case for another view. Sanderling’s performance can be had only in a three-CD set of the four symphonies, one of the finest cycles available (Eurodisc 69220-2RU). In his 1, accents are sharply drawn, secondary voices given their due, and the sonority is free of excessive weight. As a result, the music acquires an inner tension that generates its own brand of propulsion. Similar in overall approach is Horenstein. Here the prevailing sonority is lean, with motivic profile always well-defined. As a result, the music never becomes inflated, acquiring, instead, a grim insistence tempered by a poised integrity that serves as a reminder of the Classical-Romantic polarity at the work’s core. I have not heard the Chesky CD reissue (CD-19), but the English RCA LP boasts clean, close, slightly bright sound that complements the performance.

It is probably no exaggeration to say that Giulini (DG 427 804-2) has recorded the quintessentially controversial edition. Tempos are very slow, and, with a first-movement repeat included, the performance runs to what may be a record-breaking 53 minutes. Yet, owing...
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to the conductor's rhythmic steadiness, a bleak, brooding intensity emerges that grows in cumulative impact as a result of his avoidance of mannerisms. All kinds of felicities exist here, notably an exceptional care with detail and superb execution by the Los Angeles Philharmonic. Not a performance for all tastes, perhaps, but one that may appeal for its riveting power.

Similar in approach though not so expansive are two recordings of Wand (RCA 60086-2-RC, with the North German Radio Symphony of Cologne; and RCA 60428-2-RC, with the Chicago Symphony). As a mid-priced edition, the Cologne account is cheaper and, given its musical sonority, a far better buy. The Cologne ensemble may lack the virtuosity and tonal allure of the Chicagoans, but its coarser tone better suits the craggy nature of the music, and Wand is a more animated interpreter in this earlier (1982) effort. Indeed, it generates a power and drama that place it among the best editions available, even Wand's occasional adjustments of tempo and pulse being made to sound logical and apt.

Newly released are performances by Muti and Sir Colin Davis. The former (with the Philadelphia Orchestra, Philips 426 299-2) is a major disappointment. The first movement, in particular, is disjointed by a frequent rupturing of pulse, the prime example being a tasteless modification of pace just before the recapitulation that is so extreme it has the effect of slicing the movement in two. The inclusion of an exposition repeat only intensifies the disjunctive effect. The second movement is rather sentimental, and the finale, echoing problems in the first movement, is broken into little sections that do not gel. The CD is filled out with a ponderous Haydn Variations.

Davis's performance (with the Bavarian Radio Symphony, RCA 60382-2-RC), despite its leisurely pacing, is much more of a piece. No first-movement repeat is observed, and the opening Poco sostenuto is urgent and purged of the bloated pretension sometimes imposed on it. It's interesting, too, to hear how Davis, unlike Muti, makes sense of the triumphant return in full orchestral dress of the brass choral from the finale's introduction: with Muti, that return is detached and sentimentalized by legato phrasing; with Davis, it epitomizes the dramatic transformation of themes endemic to sonata style. And in the slow movement, Davis's avoidance of too much vibrato in the violin solo and his preference for transparency avoid Muti's cloying sweetness. This CD is also filled out with the Haydn Variations, a performance that has a bit more backbone than Muti's, but that still lacks the dramatic contrasts the work demands; the perorational return of the main theme sounding not so much triumphant as sleepy. Still, for those favoring a broad, middle-of-the-road 1, this well-recorded edition has much to recommend it and completes Davis's cycle of the symphonies.

As a closing note, it is worth citing Brahms's original piano four-hand sketch of 1 recorded by Duo Crommelynck (Claves 50-9102, reviewed in Vol.14 No.4). It is this version that introduced the symphony to a small, select audience shortly before its premiere. The performance is valuable not so much for musical pleasure as for revealing (indirectly) the imaginative expressivity of Brahms's scoring and how it contributes to the work's sense. In effect, this arrangement testifies to the absurdity of the once-held notion that Brahms was a "thick" orchestrator. Moreover, it provides cogent insight into his creative processes, and for that alone the recording is invaluable.
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Stereophile, September 1991
The stainless steel headband was getting tighter across his forehead; five minutes ago he could've changed his mind, but now it was too late and he was glad for it. Soon he'd be free, free of the droning, pelvic soul music, music of a people and a culture so abhorrent to his nature the only way out was...

It wasn't my idea to review the Stax/Volt box set; I'd had enough of the whole humanity trip and quit Stereophile a long time ago, and the last thing I wanted to do was get back into contact with anybody, much less review some music. But Richard Lehnert was one of the few people I could still semi-relate to, so when I saw his E-mail as I logged on one morning, I E-mailed him back and suggested we do virtual-lunch. He was still in Santa Fe with Jane, and when we virtually-met in the Compuservateria I could see he was still very much at peace with himself. The conniving fool.

I chose as my dining scenario the Carnegie Deli of New York City circa '74, and the images of the virtual hot pastrami sandwich and Dr. Brown's cream soda looked so real in my VR helmet I began fidgeting inside my simul-suit. Richard set his virtual-muffalata down and looked me straight in the image.

"It's getting worse, isn't it? I haven't heard from you in months."

The manuscript of this review was discovered by a bug lady rummaging through the burnt-out ruins of Mr. Greenberg's Austin, Texas mansion. Once a Stereophile reader (until bankrupted by her hardware habit), she recognized Richard Lehnert's name and forwarded it to us.
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Sterophile, September 1991
"Big deal," I told him. "Hey virtual lady! Can we get some more goddam virtual pickles already?"

"You're withdrawing further; even your voice sounds different."

"It damn well better," I said; I'd slapped a new algorithm in the voice-synthesis section to avoid positive voice-stress identification. Another few yards of distance never hurts. I asked Richard what he wanted me for in the first place.

"I want you to do a piece for the magazine on the new Stax/Volt box set. Nine CDs. Every Stax/Volt A-side put out between '59 and '68, and some of the Bs. All the stuff you used to go nuts over before the... before your...

What Richard was being so annoyingly polite about was my breakdown. I had a break-down. I found out, on my own, THANK YOU, just what was the problem—ie, PEOPLE—so I cut that particular toxin from my daily diet, so to speak, and thus cured myself quite cheaply, suddenly, and, if I do say so myself, PERMA-NENTLY. Every day we spend interacting with other people, we get a little more insane from all the random, unpredictable behavior and eccentricities of our fellow humans; it got to the point where the more I tried to control my environment, the less order I achieved. My systems collapsed, my mind began to unravel. I needed to shed my skin, and I wanted the new layer to be metal.

"You're getting away from us, bro; you don't write, you write as hell don't call... what is it you said to me, that you don't do real-time anymore? That you can't get any closer than a minimum of three successive A-D-A stages in a commlink or else you start hyperventilating? That you don't even wear your glasses in your VR helmet anymore, because you want even the screens to be out of focus?! You need to rediscover yourself, Corey, and I'm sending you the Stax/Volt box to start with. You used to go on and on about Otis Redding and Steve Cropper; listen to it again and maybe something'll click within you before it's too late. You've got a lot of people very scared, I want you to know. Jane cries for you, man... I do, too."

Same old Richard, getting human on me again. I banged my fists hard on the support surface and virtual-knocked over the virtual napkin dispenser. I told him not to waste his tears on me and gave him a post office box to send the set to; I'd hired a boy to fetch my mail and groceries for me, and a few weeks later the security system went off at the sound of his knocks on the front gate. I called up camera five on the screen and saw his spotted face and runny nose staring into the lens.

"Mr. Burroughs! Mr. Burroughs! Are you home?"

His hand was gripping the gate so I switched on the voltage I'd wired to keep animals off the property; he jumped a good five feet and landed on his ass.

"GET AWAY FROM THE GATE!" I screamed into my mouthpiece. "I TOLD YOU NEVER TO TOUCH THE GATE! Now leave my supplies there and GET LOST!"

The motor that controlled the headband pressure shook inside the helmet as the pressure on his skull increased. His eyes were forced open as the skin of his forehead was pulled upward by the ever-shrinking steel band. His hands involuntarily gripped the now-useless controls, the knuckles white and trembling. The earspeakers inside the helmet blared Otis Redding's "These Arms of Mine," and his death-mask leer drew his mouth's corners deeper against his cheeks as he heard his neck cracking... .

Richard had sent the latest issue of Stereophile along with the box set, and I paged through it with distaste; they'd gotten themselves a new hotshot, some kid named Dan Pussy. Real funny guy; the readers ate him up. Well, young Dan Pussy would learn what it's really all about sooner or later... . I opened up the Stax box and looked inside. Jesus, nine CDs?! I couldn't remember any of the names... Otis? Carla Thomas? Eddie Floyd? Who were these people?! And what kind of a name for a label was Stax/Volt? It reminded me of the voltage I'd turned loose on the boy earlier, and I laughed out loud for the first time in months; it felt strange, and the echoes down the unlit, empty halls sounded sinister, like I'd never heard myself sound before. I liked it.

"Soothe me baby, soothe me... ."

What was this crap?! This Sam and Dave group was horrible; imagine miking an actual drumkit for the rhythm tracks! Why hadn't they just used a digital drum machine? This Al Jackson guy kept switching the accents, and his snare drum was always a few milliseconds behind the beat; what was he trying to do, create a groove?! When you summarily shut yourself off from all human contact and emotional involvement, the last thing you want is a groove: In the past year, I'd gotten heavily into Kraftwerk, Eno, Jean-Michel Jarre... Eurocentric droning synthesized robotic OOZE was where it was at! I'd put on Jarre's Equinox in the morning and just let it waft through the corridors like some medieval death march. The music meshed perfectly with the gothic lay of the house, and it didn't actively interfere with any of my thoughts or movements. That was the beauty of Eurosynth: it didn't mean anything and it didn't make you want to move. It
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left you alone, which is as it should be.

But the Stax discs were unlistenable; song after song, I became agitated, irritable, involved. "DAMN YOU!!!" I shouted at the hi-fi, "STOP MAKING ME FEEL LIKE THIS!!" Of all the artists on there, the one called Otis Redding was the most unbearable. His songs typified the worst characteristics of the Stax/Volt sound: a hip-shakin' groove heavy on the backbeat, bright'n'punchy horn charts, and minimal, supremely funky Southern soul electric guitar, bass, and organ backing. But the most salient and unnervingly wretched component of this doggerel was Otis's voice. I checked it out on the FFT analyzer, and half the time he didn't even sing in perfect pitch! The other half of the time, he was singing out of time with the rest of the musicians!! No wonder they developed Harmonizers and samplers to correct this shit; this Redding fellow seemed to be proud of his organic limitations! I guess nobody ever told him about the importance of proper intonation, and I'm sure he never owned a metronome; it was just this kind of gleeful trashing of the established European order-driven aesthetic that drove me around the bend the first time around.

Through the smoke from the shrieking motor be could see the image of Richard on the big screen, screaming "NO NO NO!!," but there was nothing he could do; the stainless-steel band was cutting into his forehead now and the pain was nearly hallucinatory. He could feel the plates of his skull scraping against each other as they began the inevitable collapse inward, and the image of the frantic man on the screen seemed a billion miles away.

The other "artists" were no better: Booker T. & the MG's and the Mar-Keys played instrumental that were thankfully devoid of those involving vocals, but still drove me up the wall with their relentless rhythmic invention and downright funkiness. Why couldn't these guys just play the changes straight!? The songs were simple enough in structure; why did they have to make them so unique? It was hard enough that I had to suffer through tube-amplified guitar and bass. In fact, I think the entire Stax studio in Memphis had been tubed, from the mikes to the Ampex tape machines; how they ever got around the sonic shortcomings of tubes was beyond me, but the entire set did have a complete absence of the hard, brittle quality I loved so much on my Eurosynth CDs, and gave the Stax discs a warm, lovely tone that set my teeth on edge. If I'd wanted golden butter, I'd have gone to Virtual Wisconsin.

The more I listened to the Stax discs, the more confused and disoriented I became. I'd be in the VR suit going through my various simulations when I'd notice my foot tapping along to "Green Onions" and suddenly have to reset the whole scenario in anger. Or I'd be playing computer golf and hit one into the drink because the music was stirring up long-forgotten feelings inside me; emotional responses I'd spent years trying to eliminate, with damned good reason.

It just didn't pay to feel anything anymore, but these Stax/Volt singles were nothing less than celebrations of feeling, of triumphant human redemption, of the sensual pleasures of the flesh. Looking through the 65-page full-size book included with the set, I saw a record label that had all at once reinvented Southern soul music and provided the down-home funky flipside to Motown's urban pop dance empire. And through it all, the presence of Otis loomed large; both tragic and heroic, Mr. Pityful, all the way country in every sense of the word and fiercely proud of it—Fa, fa fa fa, fa, fa fa—the man who built Stax and the greatest soul singer this world has ever known. I hated every minute of it.

The stainless-steel band broke through the skin like a sausage casing. Corey's eyes bulging out like a startled frog's as the twirling pinwheels crashed inside his head and the gears of the helmet whined in anger.

But I couldn't stop listening to it; that was the problem. As much as I hated the way it made me feel like dancing, I became perversely fascinated with it as an exercise in self-flagellation, much like seeing how long one can hold a red-hot coal. At first I only listened for a few songs at a time, then I eventually put the whole set into the multi-player and set it for infinite repeat, letting the awful noise bounce off my Spic'n'Spanned walls 24 hours a day. I couldn't sleep. I began walking the halls nude with a flyswatter. Every time I passed a mirror I smashed it with my bare fist. The infocenter-taindom registered that several E-mails had been received, but I ignored them, choosing instead to burn off all my hair with a set of long fireplace matches.

"Pain in my heart... just won't let me be..."

The music was trying to get inside my head, but I knew better than that! Yes, by golly, I did! You see, I was stronger than the music. I even turned it up as loud as it would go, the sound booming through the house like some joyful reverberating getdown gospel revue. I fell to my knees and clasped my ears in fright, unable to breathe. My mind wanted the music to stop, but my body kept forcing me to confront it as nakedly and as directly as possible, to the point where I was kneeling before Gordon's old Sound-Labs stark naked with my streaked,
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stumbled head and burnt fingers, eyes wide open, arms outstretched to receive the message in all of its stupefying glory. My ears throbbed to sound pressure levels I hadn’t experienced in years, my head ached from the enduring madness, my body tensed like a Bengal tiger at the moment of the kill. I began crying like I’d never cried before, and I knew I couldn’t hold on much longer; it was happening all over again.

“COREY! ARE YOU THERE?! CAN YOU HEAR ME?”

Richard’s face came on the big screen but I paid it little notice except to smear several restaurant packets of ketchup all over the glowing surface. I wasn’t thinking about anything at all, just moving forward on pure muscle-twitch. THIS was the state I’d been trying to achieve all this time: auto-pilot. The Automatic Man. Complete absence of conscious thought, bias, and conflict. Simple. Easy. Flowing.

“I CAN’T SEE ANYTHING!! THERE’S RED ALL OVER MY MONITOR!! COREY!!”

I could hear the ants outside growing bigger and stronger with every passing second. God, to be an ant—cold, martial, without feeling. I wanted an exoskeleton like an ant’s, a metal-clad armor that would keep me safe and everybody else away. I think I can I think I can I think I can I can I think I can I think I can—

“These...arms...of...mi-li-li-ine...they are yearning...”

The yellowed foam began to collect at the corners of my mouth as I strapped myself into the VR chamber while singing along with Otis; I’d had these discs on infinite repeat for weeks now, and knew every lick and lyric by heart. I was smiling with my eyes wide open as I tapped in the command with my dirty fingers: head circumference = 0. The motor came on and I started laughing, and Otis’s screaming got louder and louder and the image of Richard flickered like a pilot light in the corner of my peripheral vision and it started to hurt but that’s okay and all I knew was that the Stax/Volt box was indeed the most sensitive, human group of recordings I’d ever heard and that it was by far the worst thing I’d ever heard in my entire life. I loved it too much...

Corey’s lifeless head flopped forward like a rag doll’s, his black tongue sticking out of his mouth dry and stiff. The horror in his ears, the imperfect rhythms, and the crude sound quality were forever silenced, but the strange and foreign music played on inside his helmet as well as throughout the main perimeter. The online news service reported later that the music played on continuously for nine months before an electrical short started the fire that burned the house down to the ground. 

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Elvis Costello's new Mighty Like A Rose needs a little weeding-out. See p.224.

Glenn Gould's last recording, and his conducting debut, is finally released: a startling re-creation of Wagner's Siegfried Idyll. See p.209.

BERLIOZ: Fantastic Symphony
WEBER: Invitation to the Dance (arr: Berlioz)
Christoph von Dohnányi, Cleveland Orchestra

This is about the fiftieth Fantastic Symphony to appear on CD and the third to emanate from the Cleveland Orchestra, which places a strong obligation on London/Decca and Dohnányi to justify the effort. Technically it is a success, with much fine sound from an orchestra very effectively arrayed across Cleveland's Masonic Auditorium and nicely set back within its spacious acoustic. As commonly happens, the upper strings seem more distant than their lower brethren, but neither clarity nor brilliance are sacrificed, while the bass has a fine richness and the big drum in (iv) and (v) archives an almost Telarc-like fullness of impact. If there's any sonic doubt it concerns dynamics, which fail to overwhelm at the end of the "March to the Scaffold" and in the "Witches Sabbath" unless one chooses to play the whole work rather too loudly for comfort elsewhere. Most un-Telarc-like, this, but I hesitate to blame the producer as a somewhat restrained dynamic seems consonant with Dohnányi's overall approach, which evinces more concern for the symphony's subtleties and sadness than for its brilliance or bombast.

He glides very convincingly between the introvert ponderings and passionate outbursts of (i), generating an underlying mood of wistful lamentation which somehow threads its way across the "Ball" movement (which, in contrast, includes the festive optional cornet part—in the Cleveland tradition) to the central Pastoral section (iii), where everything is very carefully molded. In particular, the cor-anglais player deserves congratulations for the really heartfelt loneliness suggested by his responses to the rumbles of distant thunder at the movement's end. The March, which opens with notably well-articulated rapid drumbeats, includes the repeat—as does the first movement—and avoids the all-too-common mad rush; and if the Satanic finale is a trifle lacking in fortissimo fire, there's no denying the perky humor with which Dohnányi directs the woodwinds when they gleefully mock the idée fixe theme.

This is an interestingly biased if not tremendously startling performance of the old warhorse, worth hearing for its quieter insights, while the coupled Berlioz orchestration of Weber's Invitation to the Dance is a real delight. Faster than usual, it is brilliantly brought off, with a beautifully shaped frame provided by Stephen Geber's solo-cello "invitation" and "thank you."

—John Crabbe

BRAHMS: Complete Organ Works
Kevin Bowyer, organ
Nimbus NI 5262 (CD only). DDD. TT: 68:40

Brahms wrote little organ music, and this was confined either to his earliest years or to his last. However, Kevin Bowyer makes a very persua-
sive case for it on this recording, pointing Brahms's undisputed contrapuntal skills with a tasteeful blend of organ stops and dynamics, and Nimbus has backed this up with a first-rate recording that copes with the instrument's huge harmonic range with consummate ease.

For completeness, Bowyer has included not only the revised and then published Fugue in a-flat of 1864, and the Chorale O Traurigkeit, o Herzleid, which only saw the light of day in 1882, but also their discarded 1857 originals. Also composed in 1857 were the small Prelude and Fugue in a, dedicated to Clara Schumann, and the larger, more dramatic Prelude and Fugue in g; neither was published until 30 years after Brahms's death. But perhaps his most compelling work for this genre was the compilation of Eleven Chorale Preludes, composed in 1896, and published posthumously as Op.122. These not only show a remarkable diversity but pay homage to the Baroque practice that favored the use of German Protestant chorale tunes. Bedecked in the Romantic harmonies immediately recognizable as Brahms's own, they bridge the span of two centuries with confidence.

—Barbara Jahn

CHOPIN: Piano Music
The Four Ballades, Nocturne in c#, Berceuse. Andante spianato and Grande Polonaise, Tarantelle
Bernard d'Ascoli, piano
Nimbus NI 5249 (CD only). DDD. TT: 61:14

This, blind French pianist Bernard d'Ascoli's second disc, is much better recorded than the first (of Schumann works), highlighting the clarity of d'Ascoli's textures and the floating tranquil lines he can sustain by finger as well as pedal legato. But this in itself also exposes a rather sparse and not always clean use of the sustaining pedal. Then, by the close of the First Ballade, it becomes apparent that d'Ascoli just doesn't have the weight and power to bring such cataclysmic passagework as the chromatic double octaves to full fruition.

As the disc progresses, though, it is d'Ascoli's basic lack of imagination that really palls. Melodies are given straight, there is no ebb and flow, no gentle rubato. The Berceuse is an interesting case in point—it becomes a beautifully neat, technical exercise, but lacks poetry and atmosphere. Chopin preferred to hear other pianists play his music; I fear d'Ascoli would not have been one of them.

—Barbara Jahn

DVORÁK: Symphony 8, Serenade Op.22
Claus Peter Flor, Royal Philharmonic
RCA 60234-2-RC (CD only). Mark Vigan, Simon Rhodes, engs.; Andrew Keener, prod. DDD. TT: 69:19

DVORÁK: Symphony 9, Carnival Overture
André Previn, Los Angeles Philharmonic

DVORÁK: Symphony 9, The Wood Dove
Eliahu Inbal, Philharmonia Orchestra
Teldec 2292-46468-2 (CD only). Michael Brammam, eng.; Martin Fouque, prod. DDD. TT: 63:36

One would hardly recognize Dvorák's 8th as his most genial symphony in the hands of Peter Flor. In all his recordings that I have heard, Flor has sounded supremely cautious, and this has been most readily reflected by a propensity to select leaden tempi that crush all the life out of even the most vivacious of rhythms. Hence, this most constructionally original and lyrical work, with its plethora of toe-tapping themes, becomes a somewhat languorous beast.

Although the third-movement scherzo goes some way toward eradicating the torpidity of the Adagio, the weaknesses of the Finale are heightened, and the result is, again, totally energating. Even the fresh-air quality of the coupled Serenade is dampened by a mood of disquiet, thanks to the unyieldingly tight control of the reins Flor deems necessary in order to achieve what is, admittedly, a laudable neatness.

Pedantry has never been André Previn's style, as demonstrated by his much praised Dvořák 8, with its unforced light and shadow and its rather surprising, though nonetheless convincing, subtlety. But I have to admit to disappointment with his "New World." That element of rubato that worked so well in the 8th seems to halt the flow of phrases unnecessarily in the 9th. But there is some delightful playing here, particularly in the Largo, and the vitality of the Finale is truly impressive.

Not so many years ago, the Carnival Overture could quite easily have appeared on that list of works representative of Previn's special brand of inspired direction. Here it lacks spontaneity; it even sounds dull and metrical in places and, considering a TT of only 50:33, this all adds up to a disc that cannot be recommended.

Inbal's approach stands somewhere between those of Previn and Flor, with the control of neither, but certainly with the ability to draw a more spirited, heartfelt performance from the orchestra than Flor can command. Here, the sum of the parts is definitely more praiseworthy than its individual components, and with a colorful performance of the programmatic Wood Dove, a fresh performance and 13 minutes more music for your money, it has to be recommended, despite its shortcomings, over Previn's recording. However, none of these readings told me anything about the symphonies that at least two dozen other conductors haven't already committed to disc.

—Barbara Jahn

Stereophile, September 1991
ENESCO: Oedipe
José Van Dam, Oedipus; Gabriel Bacquier, Tiresias; Nicolai Gedda, Shepherd; Gino Quilico, Theseus; John Aler, Laius; Brigitte Fassbaender, Jocasta; Marjana Lipovsek, Sphinx; Barbara Hendricks, Antigone; others; Orfeon Donostiarre, Orchestre Philharmonique de Monte-Carlo; Lawrence Foster
EMI CDS 7 54011 2 (2 CDs only). John Rushby-Smith, prod. DDD, TT: 2:36:37

As one can see from the virtual Who’s Who in Opera cast, this recording must be taken seriously. Many of the singers have only a few lines to sing, but they have been chosen carefully. Is Oedipe worth such trouble and preparation? The answer is a resounding Yes!

The Romanian Enesco worked on this, his masterpiece, for 15 years; it was premiered in Paris in 1936 and was acclaimed a great work. It was revived the next season and then disappeared until 1955—so much for the need for great art. This is its second recording; the first was in Romanian (it was written, and is performed on this recording, in French) and appeared briefly on Electrecord in the ’60s. The opera tells the entire Oedipus story, from the birth and Tiresias’s prophecy to the moment before death at Colonnus. The only weakness I can discern is in the final, Colonnus, act—there’s a perfumed piety to it which I find cloying and out of line with the rest of the opera. (The musical idiom is highly individualistic until then—a mixture of French schooling with Romanian/Baltic harmonies, and a hint of Bartók; the last act is pure French impressionism.) But this is just talk—the opera is enormously effective and this performance is—I hate the word—definitive.

José Van Dam, a great artist, here surpasses himself in the title role. He reaches into his soul and draws a complete portrait of the tormented Oedipus, in tones ranging from Schoenberg-esque Sprechstimme to the most rounded legato. This is award-winning singing acting. There isn’t a weak link in the cast, but other standouts are the terrifying Sphinx of Marjana Lipovsek (the music which accompanies her appearance can make your skin crawl), the self-confident Laius of light tenor John Aler (with a total of 14 bars to sing!), Brigitte Fassbaender’s hopeless Jocasta, and Barbara Hendricks’s touching Antigone. I might add that the entire cast sings in flawless French, and this helps, too.

The general tone of the opera, as one might expect, is somber, but Enesco, realizing that he was dealing with Greek Tragedy, brilliantly evokes pity and terror as well. He also tone-paints, as in the first act where the shepherd (marvelously portrayed by Nicolai Gedda) sings that he and the others have plaited garlands from leaves and carved flutes from reeds. The orchestra is large and the texture intricate, but Lawrence Foster balances the various strands masterfully and helps us through some of the knotty moments. He also makes the Monte Carlo Philharmonic sound like a genuinely major band; they respond to him and the music beautifully. The production job is fabulous, with great clarity and depth and an absolutely natural voice-orchestra balance. As I said above, “definitive,” and it’s true. Don’t miss this one.

—Robert Levine

GRAINGER: To the Fore!
Symphonic Band Music of Percy Grainger: Molly on the Shore, Country Gardens; Chorale No.2 (Franck); March (Bach); Tuscan Serenade (Fauré); 7 others
Keith Brion, Kenneth G. Bloomquist, cond.; Michigan State University Symphonic Band
Delos DE 3101 (CD only). John Harple, John McDaniel, engs.; Adam Stern, prod. DDD. TT: 56:44
GRAINGER: Disbeded up for Piano, Vol. III: Folksong Arrangements
Country Gardens; The Merry King; Molly on the Shore; Irish tune from County Derry; Knight and Shepherd’s Daughter; Scotch Strathspey; One more day my John (easy & complex versions); 20 others
Martin Jones, piano
Nimbus NI 5244 (CD only). DDD. TT: 68:26

One of the things I enjoy so much about Percy Grainger’s music is that his high-spirited style, sometimes impertinent, sometimes tender, always imaginative, invariably brings a smile to my face. Here are two very fine anthologies, each containing some of the most popular selections (the Michigan Band includes Country Gardens in both Sousa’s arrangement and the composer’s own, quite different, later setting), but also providing a fair number of rarities. For example, in the third volume of his complete piano-music survey, Martin Jones supplies a five-minute keyboard edition of the Scotch Strathspey, as well as the nearly nine-minute Jutish Medley, these being by far the longest works (shortest is the 31-second Bristol Town). And these are just a few among a number of unusual items in this 28-piece album.

Keith Brion, who guest-conducts all but two of the dozen band settings in To the Fore! (a Grainger expression asking for a musical phrase to stand out), reveals what an extraordinary arranger the composer was with a 14-minute organ chorale of Franck, a song by Fauré, a chorale by J.S. Bach plus an Anna Magdalena march by his son, C.P.E., as well as the usual familiar selections that are de rigueur for Grainger collections. The Michigan Band performances are in the main very satisfying, although they never quite attain the subtlety and polish of Frederick Fennell’s groups or another favorite of mine, the Central Band of the Royal Air Force (EMI CDC 7 49608). Delos’s reproduction, however, features an excellent soundstage and separa-
tion, with great instrumental color and almost tangible brass. Martin Jones, in spite of the usual distant Nimbus tunnel sonics, provides great pleasure with his exuberance and sensitive identification with the Grainger style. This particularly varied collection would in fact make a worthy introduction to Grainger's piano set- tings, often markedly different from his instrumental and orchestral treatments of the same pieces.

—Igor Kipnis

**LISZT: Tone Poems**

Hungarian Rhapsodies I–6, Les Préludes, Mazeppa, Battle of the Huns, Mephisto Waltz

Hermann Scherchen, Vienna State Orchestra
MCA Classics MCAD2-9832 (2 CDs only). Herbert Zeithammer, eng.; Kurt List, prod.; Doug Schwartz, remastering eng.; Martin Fleischmann, digital remastering prod. AAD. TT: 2:07:30

I must admit that I actually purchased these double-decker (two-in-one) CDs out of pure nostalgia. It was back between 1957–59, the time of their initial issuance on the long-since defunct Westminster label, that I was working for that company as Art and Editorial Director. Although never an out-and-out admirer of Hermann Scherchen (1891–1966), I did recall that these Liszt performances of six Hungarian Rhapsodies, orchestrated by their composer in collaboration with Franz Doppler, plus the three tone poems and the Mephisto Waltz, were very special. Originally issued in Westminster's high-end audio Laboratory series (each side less than 20 minutes long, careful quality control, plus packaging in a zippered plastic bag and booklet that included a minute-by-minute sonic analysis), these were marvelously sounding state-of-the-art recordings. Of course, that was back in the late 1950s; how would they sound AAD'd?

To my utter astonishment and that of several other listeners, the performances emerged with superior, wide-spread imaging and with remarkable fullness of body; Westminster's sonics, in spite of a penchant for spot-miking and pinpointing of certain instruments, were always impressive but not exaggerated beyond living-room listening credibility. They are just as striking again, so much so in fact that, without fear of dispute, one can describe these two CDs as sounding better than a great many discs of very recent vintage.

What of the performances? The Vienna State Orchestra, recorded on a tight budget (limited rehearsals, non-expansive sessions) was not the most precise of ensembles, or especially refined tonally. Even wind and string intonation could be a problem. The wispy organ in *The Battle of the Huns*, furthermore, is actually embarrassing. What makes these renditions come so vividly to life, however, was the highly romantic, passionately involved, free-wheeling conducting of Scherchen. Surely the surging *Les Préludes* has to be one of the most effective recordings since the legendary Mengelberg, the most popular Hungarian Rhapsodies the rip-roaring orchestral equivalent of the pianistic individualisms of a Horowitz or Cortot. The great atmosphere and directorial impetuosity one can hear on these bargain CDs (we're talking about a cost of between five and six dollars per CD, depending on the store) would make them recommendable no matter the sonics. But when the sound is as impressively palpalbe as this, the set becomes an irresistible bargain. Except for the very minor complaint that cutoffs at the end of pieces could have been less abrupt, there can be nothing but praise for the transfers. —Igor Kipnis

**MONTEVERDI: Vespers (1610)**

Soliosts, Chant Choir, New London Consort, Philip Pickett
L'Oiseau-Lyre 425 823-2 (2 CDs only). Peter Wadland, prod.; Simon Eadon, eng. DDD. TT: 91:28

**MONTEVERDI: Vespers (1610)**

Soliosts, Choir, and Junior Choir, The English Baroque Soliosts, John Gardiner
Archiv 429 565-2 (2 CDs only). Karl-August Naegler, prod.; Ulrich Vette, eng. DDD. TT: 105:42

The Pickett discs were recorded in St. Jude's Church, Hampstead (London), the Gardiner in St. Mark's, Venice, and All Saints, Tooting. Parts were recorded at a public performance. The considerable difference in overall timing is explained by the fact that Gardiner includes the smaller six-voice *Magnificat*. To balance things, Pickett features a fair amount of plainchant which has little to do with Montevedri's work, since he envisaged the motets as substitute-antiphons. The listener who chooses Pickett can cut out the chant by using his remote-control key to eliminate Disc 1, bands 2, 4, 6, 8, 10, 12, 14, 16, and Disc 2, bands 2, 14, 19.

The St. Mark's sound is resonant and lively, but does not quite capture, for me, the extraordinary velvety acoustic resulting from the concrete shapes of the many cupolae. Anyone who has conducted 16th- or 17th-century music in the basilica will understand what I mean. It is a question of neither definition nor articulation, for the finer points of the latter can be brought out by close miking, allowing the more distant mikes to pick up the atmosphere. This makes it possible to jig along in some of the psalms, where the jazzy approach detracts from the essential dignity of the work as a whole. In the *Sonata sopra Sancta Maria*, certain of the quick passages are speeded up

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out of all recognition, and no amount of knob-twiddling will control this undesirable element. What happens is that a section will begin with long slow notes, which gradually speed up because of the notation, until everything careers along at a speed high enough to warrant a ticket. What should happen is flexibility, for the Dutch writer Bannius remarked that Monteverdi’s music ought never to be performed in exact rhythmic proportion, and the composer says the same in his Eight Book of Madrigals, where performance according to the emotions is said to be much preferable to following a rigid beat. Gardiner is insufficiently flexible.

Pickett’s plainchant error derives from an edition I made in the early ‘60s, which was used for a “clean” performance of the Vespers given at Westminster Abbey, London. The Dean had informed me that he wanted a performance that would not exceed 75 or 80 minutes, since there were no restroom facilities for large audiences. By including only the invocation, five psalms, hymn, and Magnificat (all basic to the office of vespers), I reduced the total timing to 70, which was a trifle too short; but by adding the chant in conformity with a modern vespers service (as opposed to one dating from Monteverdi’s time), I reached the desired length of program. Subsequent performers questioned this approach, as indeed they should, especially for recordings. The latest to succumb is Philip Pickett.

The acoustic recorded at St. Jude’s is acceptable, however, though those listeners with high-end capabilities will probably wish to bend the output to some extent, especially in the fuller passages which I find unclear in certain respects. Yet this is, without doubt, slightly the more preferable of the two versions, even if it lacks the smaller Magnificat.

—Denis Stevens

WAGNER: Glenn Gould Conducts & Plays
Siegfried Idyll, original chamber version.* Piano Transcriptions (Gould): Die Meistersinger, Prelude to Act I; Göttterdammerung, Dawn & Siegfried’s Rhine Journey; Siegfried Idyll

Glenn Gould, piano, piano 4-hands (overdubbed), conductor; members of the Toronto Symphony
Sony Classical SK 46279 (CD only), Kevin Doyle,* Kent Warden, Frank Dean Dennowitz, engs.; Glenn Gould,* Andrew Kazdin, prods. ADD. TT: 71:00

Listening to Glenn Gould’s masterful Meistersinger and Göttterdammerung piano transcriptions again for the first time since their release in the mid-‘70s, I reacted exactly as I had then: these are fascinating abstracts of Wagner’s music, Gould’s astonishing technique revealing in x-ray fashion Wagner’s equally astonishing contrapuntal skill. But music they’re not. It’s nowhere clearer than in this disc, by a master technician and musician, how inextricably wedded is Wagner’s music to his orchestral writing. (Wagner is not Bach, who sounds wonderful no matter on what motley aggregation of instruments his music is played.) Only in the brief fugal section of the “Rhine Journey,” as might be expected, does Gould and the music take off. Otherwise, in Gould’s extremely capable hands, some of Wagner’s finest music still ends up sounding no better than Liszt’s lesser tone poems: too many notes, too little soul, all painted with too literal a brush.

The Siegfried Idyll is altogether different. Wagner’s original and uncharacteristically sparse scoring (13 instruments) lending itself perfectly to Gould’s expansive art of piano reduction. Most important, Gould slows down the piece to 23:31, making it by far the longest Idyll on record (apart from his own orchestral version; see later). He allows himself the time and space to pick lovingly, savouringly over this music’s fragile bones, and, for the first time in my listening experience, this very private, intimately charming piece of incidental music, never intended for public performance, becomes a small masterpiece of High Romance. For the piano transcriptions Gould is at the top of his form, but, yes, he hums throughout, and the inside-the-instrument piano sound is painfully harsh and fatiguing.

But the real treat is Gould’s 1982 orchestral version—his conducting debut and final recording, released here for the first time. It’s even longer than his piano version, if by only a minute, and even more of a revelation. After the first few bars I relaxed fully under Gould’s slow, sure conducting hands, not resisting. My gratitude for his willingness to take time to create this most personal vision grew and grew over the next 24 minutes and 28 seconds. Needless to say, I heard things I’d never heard before, as arpeggios became figures, figures became phrases, phrases became long, suspended melodic lines, and rests threatened to stop time itself.

Program your CD player to play first the piano arrangement, then the chamber version. At nearly the same speeds, they remain wholly different creations. Gould makes the listener work and wait for it, savor each note—his genius is to coax the listener to work hard, willingly, and happily, his final reward complete satisfaction. The pick-up chamber orchestra of Toronto Symphony players leaves a good bit to be desired in terms of execution, but the long, slow pace leaves the players so revealed I’d hate to have been in their shoes.

For those familiar with the Idyll, this disc is a must-buy for the chamber-orchestra version.
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I want to tell you that I think this is the best and most important recording yet from Joel Cohen and his Camera, but first we have to talk about Hubert Humphrey. You see, the late Happy Warrior once expounded his economic theories thusly: "There's two kinds of people—triclators and percolators. The triclators think it all trickles down from the top, and the percolators think it works its way up from the bottom." Of course, musicologists tend to fall into similar camps: some believe that folk "composers" borrow their tunes from through-composed "art" music (Parkell is a usual example of a "classical" composer whose tunes have been thus borrowed), while others believe that the great composers could not exist without the popular idiom from which they draw strength and inspiration. Like the Bobby Kennedy character in Barbara Garson's MacBird, I basically agree with both positions. New Britain is a fascinating exploration of just such musical cross-fertilization; not only do Cohen and his cohorts do a fine job of elucidating the sources of American folk music, they also have a great time doing it.

When classically trained singers perform folk music, the result is usually a sad travesty in the literal sense. I once heard Marilyn Horne perform an "Evening of American Song," and I wanted to crawl under a chair out of sheer embarrassment. Not so with the Boston Camera; I would actually go to a folk concert by these people. Even when they essay a cowboy tune, you laugh with them, not at them, and this turns a scholarly exercise into a performance that can be enjoyed without reference to the notes. As a Philadelphian and admirer of the Sacred Harp tradition (a close cousin of an Elizabethan system of solmisation used to teach sight-reading to an illiterate audience, and more commonly known as shape-note singing2), I especially enjoyed the five Sacred Harp songs that close this CD. I also loved the tracing of the song-trail that leads from a 15th-century French ebanson through "Barbara Allen" to the hymn "Heavenly Dove."3

Another really interesting thing about this CD is that the engineer seems to have taken his cue from the performers and produced the best sound I've heard from Erato at their Boston venue. There is more detail and a greater sense of dynamics than on previous efforts, without any foreshortening of the soundstage. This is definitely a disc to have, whether you agree with all of Cohen's scholarly argument or not. A gorgeous job all 'round. —Les Berkley

**EVGENY KISSIN: Carnegie Hall Debut Concert**


Evgeny Kissin, piano

RCA 60445-2-RC (2 CDs only). Leszek Wojcik, eng.; Jay David Saks, David Frost, prods. DDD. TT: 104:13

What I found most enjoyable about this September 30, 1990 concert recording made at Kissin's Carnegie Hall debut when the Soviet pianist was not quite 19, was the simplicity of approach to the familiar Liszt Liebestraum and the extraordinary brilliance of the same composer's Spanish Rhapsody. What struck me as least appealing were the same things I found wanting in those of Kissin's recordings that I had previously heard. The technical display, it goes almost without saying, is extraordinary, but the dazzle is presented without subtlety or sensitivity. Almost all of the more aggressive of the Symphonic Etudes of Schumann, for instance, are overpoweringly projected, giving at least one listener the impression of a Russian tank preparing for onslaught. There is little charm even in quieter, potentially caressing moments, nor does there seem to be anything personal to Kissin's palette of expressive devices. The passions are there, but sound to me like superficial effects. Kissin surely has talent galore, but sadly, I continue to find his music-making soulless.

From the sonic end, the miking is close and

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1 This is also due, I think, to the fact that the recorded balance is extremely close to the instruments. This kind of orchestra-under-the-microscope engineering—it presents an illustrated score rather than a document of a real acoustic event—leaves me in two minds: while the sounds of the individual instruments are scratchy and not particularly beautiful, that very lack of beauty to the sound allows the individual musical lines to stand proud of the overall sonic texture. However, I can't help feeling sorry for the musicians, there being nowhere for even the slightest uneveness of tone or technique to hide. —JA

2 Philadelphians call it "Sacred Harp" because of a famous collection with that title which was published here.

3 A guitarist friend of mine and I used to trace the path from "Greensleeves" through "Streets of Laredo" to "House of the Rising Sun," complete with Library of Congress field recordings.
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airless, undoubtedly so as to reduce extraneous noises (when not applauding, the audience is remarkably quiet). Forte passages, however, are hard and uncongenial to the ear.

—Igor Kipnis

The Young Otto Klemperer

BRAHMS: Symphony 1
R. STRAUSS: Till Eulenspiegel's Merry Pranks; Salome: Dance of the Seven Veils
WEILL: Suite from The Threepenny Opera

Otto Klemperer, Berlin State Opera Orchestra
Koch Legacy 3-7053-2 Hi (mono CD only). Disc-to-tape transfers by Mark Obert-Thorn. A/D. TT: 74:04

Otto Klemperer was one of the greatest conductors of this century. We know him mostly by the stereo recordings he made on EMI with the Philharmonia Orchestra during the last two decades of his career. Those records are responsible for our usual preconception of Klemperer as a chronically serious conductor, rooted firmly in Teutonic tradition, creator of architecturally adamantine performances of the classics which move with glacially slow inevitability.

This view is incomplete, as are comparisons of Klemperer's EMI recording period with Bruno Walter's last years with Columbia. With Walter, the child was definitely father to the man. His interpretations evolved within a consistent vision. They gradually toughened during his years in America, but from youngest days to last he remained a sensualist and a conservative, rejecting most trends of 20th-century music.

The older Klemperer, the conductor of the EMI recordings, differs from the younger to the point of discontinuity, a discontinuity heightened because for 15 years in the middle of his career, he made no recordings. The recordings on this Koch disc, made before that hiatus, when the conductor was in his mid-40s, reveal a different man: a radical, exploring, sometimes volatile musician. He embodies what appears to us today as the contradiction of his time: though committed to the music of the young 20th century, Klemperer still clings to some of the attitudes of his conducting elders.

Nowhere is this conflict better illustrated than in the Threepenny excerpts, arranged from Brecht's musical play which premiered in 1928, just three years before the recording was made. At the time, this was scandalously decadent, popular music, the negation of the heritage of Brahms and Bruckner, and with Marxist attachments to boot. (The suite was, in fact, commissioned by Klemperer himself, a point curiously not mentioned in Koch's booklet.)

Klemperer's performance shows the newness of Weill's work in perhaps unintended ways. The Berlin State Opera Orchestra sounds a bit lost playing music which must have lain far from their experience: they're flat of phrasing, and the lack of vibrato in certain instruments is wrong for music derived from the nightclub. One of the clarinets is so at sea in the Tango-Ballade that he completely loses composition, squeaking like a high-school band-member. Probably got sung just that way at the play's premiere, too.

Till Eulenspiegel provides quite a contrast. Though at 35 years old it wasn't exactly regular repertoire, Strauss's music was much more in the blood of the orchestra members. This 1929 performance is bouncier and more limber than Klemperer's 1960-ish stereo recording (which, incidentally, EMI omitted from the single-CD compilation of Klemperer's Philharmonia Strauss—I believe the only piece not to be included). The contribution of the unnamed solo violinist is especially ripe and sassy. Not Karajan-precise, still well-controlled even by today's standards of execution, this is a virtuoso reading.

The 1928 reading of Salome's Dance shows how wrong we can be in our preconceptions of Klemperer. It is unremitting and violently carnal throughout. The Philharmonia recording of three decades later is marginally slower, the interpretation having picked up much more sensuality over the years, building gradually, almost teasingly, to its orgasmic climax—hardly the granitic kind of approach we associate with Klemperer's late career.

The Brahms symphony, recorded February 1928, spans quite a range of emotion—perhaps too great a range for the young conductor to make complete sense of. It certainly lacks the singleminded power of Klemperer's justly celebrated Philharmonia reading. There's more of the tempo ebb-and-flow we expect from performances of the early part of the century. The strings employ portamento and a big vibrato.

Klemperer broods over the second movement, occasionally lingering over espressivo passages. The third movement disappoints, with clumsy, clipped phrasing; it's not all of one piece. Klemperer makes the last movement ebullient in the manner of its great symphonic influence, the finale of the Beethoven Ninth. It suffers only by comparison with a truly great reading of the movement, such as the awesome drama of the Philharmonia performance, where the solo horn yawps primordially, almost like the trombone in Mahler 3.

Clutching a recommendation for this Koch disc is Mark Obert-Thorn's superior transfer from 78s. Side-joins rarely assert themselves. There is a smooth consistency to the low level

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of surface crackle, which suggests that some kind of filtering was applied; if so, it must have been done sparingly; as the sense of air around treble instruments suffers little. Tone-color below the treble is rich. And, derived from 78s though it is, this disc produces true pianissimos absent from the later EMI recordings, where soft passages were often overamplified by the close microphone placement Klemperer favored in his pursuit of maximum clarity.

Koch has provided a rare document, a generous and eclectic sampling from a great conductor's early years. In the process they have also created one of the better CD reissues of 78-era material. Highly recommended.

—Kevin Conklin

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**A Kronos Quintet**

**In Formation** (Various composers)
Kronos Quartet
Reference Recordings RR-9 (45 rpm LP), RR-9CD (CD).
Keith O. Johnson, eng.; Kronos Quartet, J. Tamblyn Henderson, prods. AAA ADD. TT: 33:45

**Astor Piazzolla: Five Tango Sensations**
Kronos Quartet
Elektra Nonesuch 9 79254-2 (CD only), Judith Sherman, Rob Eaton, Dave O'Donnell, Dan Gellert, engs.; Judith Sherman, prod. DDD. TT: 26:46

**Lutoslawski: String Quartet**
Kronos Quartet
Elektra Nonesuch 9 79255-2 (CD only), Judith Sherman, Juhanii Liiimattainen, Tony Eckert, engs.; Judith Sherman, prod. DDD. TT: 23:47

**Kevin Volans: Hunting: Gathering**
Kronos Quartet
Elektra Nonesuch 9 79253-2 (CD only), Judith Sherman, Juhanii Liiimattainen, Tony Eckert, Alex Haas, Dan Reid, engs.; Judith Sherman, Kronos Quartet, prods. DDD. TT: 61:41

It is, at once, among life's most sobering and exhilarating lessons that by taking risks, you court both success and failure. Of course, you can also end up somewhere in the murky in-between. The Kronos Quartet is, to say the least, among those who dare, and while their efforts seldom result in outright failure, they can—as proven by at least one of these releases—inhabit the murky in-between. But when these musicians succeed, they often do so in immodest proportion. In these five recordings, Kronos is stylistically all over the place, as usual, and the results range from the banal to the fascinating. The listing above runs roughly in that order, and it is the order in which I'll discuss them. The Piazzolla, Lutoslawski, and Volans recordings are the new Elektra Nonesuch "singles," standard-size CDs containing short works. The Reference Recordings In For-

**mation** disc is not much longer than the singles. Recently released on CD, it was the first recording ever made by the current members of Kronos, in 1979, and consists of music originally appearing on the 45pm LP. It's duration is just over half an hour, which for me was about 30 minutes too long.

It's not that the music is bad, per se, or the performances lackluster. It's all just so boring. Each one blues- or pop-based, the ten works are pleasant enough but offer very little to engage the interest. David Kechley's "The Funky Chicken" (are you getting the idea?) is riddled with rock clichés. Derek Thunes's "Wind on My Back" is almost embarrassingly pedestrian. And John Whitney's "The Funk Food Blues" contains a phrase almost identical to one from an old Buckingham's top-40 hit ("cause she knocks me off my feet—have mercy on me") was, I believe, the lyric). Ken Benshoof's "When" is an attractive lament, and Alan Dorsey's "Whatever Happened to the Hoodoo Meat Bucket?" contains some intriguing tone colors and rhythms, but this collection remains, on the whole, musical conno art. The sound quality, while good, does not strike you with its tangible realism the way most Reference recordings do. The LP is more tactile, lively, and deeper in soundstage than the CD, but even the finest recording job would not make me want to listen to this music repeatedly.

I'm sorry that I can't be very congratulatory toward Astor Piazzolla's *Five Tango Sensations*, either. Piazzolla is considered something akin to the John Coltrane or Ornette Coleman of tango, having taken the idiom to otherworldly new places. Not here. The composer accompanies Kronos on the banalone, which sounds something like an accordion, through a rather somnolent series of short pieces titled "Asleep," "Loving," "Anxiety," "Despertar," and "Fear." Most of these 'sensations' carry an air of hopeless longing, a deep melancholy relieved by joy, except, ironically, in the final "Fear," which is absolutely jaunty in its merriment. This music is based on endlessly repeated single, modulated melodic lines (always sung by bandonone), homophonically dressed out by Kronos. As with *In Formation*, there's just not much happening. It is music of very little substance. The sound is remarkable for its depth of image, but like the other Elektra Nonesuch CDs, the lack of upper-octave information renders the instruments rather leaden, without the luster of live music.

With the Lutoslawski disc, we start to see brilliance both in Kronos's repertoire selection and in their execution. This 1964 quartet is characterized by fresh tone colors, disjunct melodic

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motion, vigorous rhythms, and a semi-improvisatory compositional style. It's fresh, exciting, and insightful, never straying far from a strong feeling of tonality. The Kronos Quartet does it full justice. Their playing is spontaneous, with intensely felt emotion and an engaging, persuasive quality springing from vigorous attacks and sharp staccato phrasing. This performance is more convincing and compelling than another very fine reading by the La Salle Quartet on DG, and the recording quality complements the excellence of the playing, with a vivid sense of presence just slightly favoring the lower registers.

The third "single" is a 1987 composition by Kevin Volans titled Hunting: Gathering. This work brilliantly reflects Volans's South African roots. It is a dancing, singing, flowering of colors, with rapidly shifting elements neatly unified by recurring themes. The Kronos portrayal is as highly spirited as the composition itself. This is an unqualified success, and it is sonically rendered with a sense of air and performance space a notch above the other recordings in this group. Instrumental locations are pinpointed in space and extend in a wide arc across the soundstage. I highly recommend this recording.

Even better, by virtue of its containing more music, is the Black Angels CD. If Hunting: Gathering was a celebration of light, this collection may well be considered a lament for darkness. The compositions are exhilarating, not in mood but in their revelation of the inexinguishable human spirit in its most trying hours. George Crumb's lead-off piece, Black Angels, was inspired by the Vietnam War and might well be titled Darkness Audible. It is a shriek of the soul, disturbed and disturbing, menacing and fascinating. It is a credit to Kronos to call their performance devastating.

The second piece on the CD, Spem in Alium, is a Kronos transcription of Thomas Tallis's 40-part motet. It is an island of serenity among the other tortured works. Muted strings, unforced attacks, and lack of vibrato give the combined instruments a tone color close to that of a harmonium, and it works beautifully in this exploitation of wonderfully subtle climaxes and delicate dynamic shadings. Another short respite is "They are There!," a period recording—with needle-drop, scratches, and all—of Charles Ives playing and singing a patriotic World War I song. Imagine Ives making an arrangement of "Over There," and you'll pretty much have the picture. Kronos has recorded some light figurations over this old recording because they "always wanted to play a quintet with Ives." It's a curiosity, to be sure, but it's also a lot of fun.

Even more haunting and disturbing than Crumb's piece is Istvan Marta's Doom. A Sigh. It, too, employs a previously made recording, this one of eerily intoned folk songs sung by residents of a remote village in Romania. One song is about a woman's dead parents, the other evokes memories of a bloody battle. Marta scores electronic accompaniment and string-quartet parts around these recordings in a way that pierces the soul. Its effectiveness is made even more poignant by the story of the villagers' fate following Marta's visit, as told in the liner notes. I know of few recent compositions I would recommend with greater urgency than this one. You must hear it.

The disc is completed by a fine reading of the Shostakovich Quartet No.8, which carries the inscription, "to the victims of fascism and war." This music is about the perseverance of the spirit through darkness, and it is a fitting way to end the Kronos program. Lacking slightly the stillness, tension, and compassion of the Fitzwilliam Quartet's performance on Loïselyre and the pure power of the superb Borodin Quartet on EMI, Kronos still gives a persuasive and affecting reading of this moving piece. Like the other works on this CD, the sound is a bit dark and closed-in on top, but otherwise very good. Soundstage width is given precedence over depth.

Of these five recordings, I highly recommend the Lutoslawski quartet, Black Angels, and Hunting: Gathering by Kevin Volans. In Formation and Five Tango Sensations I can do just as well without. Pleasant enough, they simply don't have the substance of the other recordings. I would encourage anyone interested in the serious music of our time—indeed, of any time—to seek out all three of the recommended discs.

—Robert Hesson

Show Music

KISMET: 1990 Studio Cast
Musical adaptation & lyrics by Robert Wright & George Forrest, based on themes by Alexander Borodin
Ambrosian Chorus, John McCarthy, choral director. Philharmonia Orchestra, John Owen Edwards
Musical Heritage Society MHS 522667X (2 CDs only).
John Yap, prod.; John Kurlander, eng. DDD. TF 1:37:14

Baghdad! You must investigate Baghdad! A city rich in romantic oriental lore. Baghdad! Don't underestimate Baghdad! And learn a few of the facts of life you never knew before.

It's January 18, 1991: the bombing of Iraqi military installations has begun; Iraq is firing Scud missiles at Israel and Saudi Arabia, and I'm listening to "Not Since Nineveh," from the new recording of Kismet. The irony is almost
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unbearable. Was the world of Kismet a different, better world? Perhaps. In Kismet's world, the prayers of a "stranger in paradise" are answered, and one may ascend "out of the commonplace, into the rare." But the lyrics of "Gesticulate" deal with dismemberment; "Was I Wazir?" talks of torture and murder. Perhaps it wasn't as different as all that.

All right, lighten up. Let's stay within the world of musicals. Kismet, first produced in 1954, is really a throwback to the European operetta style rather than the integrated dramatic musical style of Oklahoma!, and survives for the same reason that The Merry Widow survives: its music. Borodin purists may disagree, but I think that if old Alexander were alive today, he'd be far from displeased with what Wright and Forrest have done with his music, and the lyrics are often quite clever.4 With the right cast and a light directorial touch, a stage production of Kismet is sure-fire entertainment, and it has become a staple of summer theaters. The score has been recorded a number of times, with the original 1953 and the 1965 revival casts, showcasing the one-and-only Alfred Drake, setting a formidable standard. (One of the studio cast recordings, Capitol SW 5202, has Gordon MacRae playing both Hajji, the father, and the Caliph, his daughter's suitor, which lends a rather incestuous air to the proceedings.)

How does the present effort stack up? First, the good news: the score, as played by the Philharmonia, has never sounded better. Conductor John Owen Edwards shows a real flair for this music, with a sure touch in both the rhythm and the lyrical passages. This is the first complete recording of the score, and, as a most welcome bonus, it includes songs from Timbuktu!, the black version of Kismet that was on Broadway in 1978. Except for Judy Kaye, the cast consists of British opera singers, and they generally perform admirably. Kaye is her usual spirited self as Lalume; Valerie Masterson makes lovely sounds as Marsinah; Richard Van Allen is a sonorous Wazir; Donald Maxwell's Hajji sounds a bit Gilbert & Sullivan-ish but is otherwise fine; only the rather dry-sounding Caliph of David Rendall disappoints. Jerry Hadley, where are you when we need you?5 What the performance as a whole lacks is the sort of theatricality that comes from extensive stage experience with the show. (Again, except for Kaye, but she has done Lalume on stage, notably in Toronto a few years ago, and with great success.) For that, one still has to turn to the original or the revival cast recording.

—Robert Deutsch

Charley Haden may have outdone himself with his most recent extravaganza, his Liberation Orchestra's Dream Keeper. Haden and such long-time, neo-anarchistic associates as arranger Carla Bley, saxophonist Dewey Redman, Sharon Freeman on French horn, and drummer Paul Motian have, through their complex, often challenging, often exhilarating music, tried to make sense of our crazy world.

Through it all perseveres Haden, a true internationalist. Relentlessly he continues his search, hoping to discover new musical shapes and forms, hoping all the while to hone his already quite impressive, well-documented skills. Colleagues may contest his politics, but I seriously doubt whether they would call into question either his technique or his ability to organize large, seemingly unwieldy projects.

Nor is Haden one to preach to the converted. Joining some of the aforementioned mainstays on Dream Keeper, in addition to mid-career people such as the awesomely talented and versatile saxophonist Joe Lovano, trumpeter Tom Harrell, and guitarist Mick Goodrick, are such babes in the woods as Branford Marsalis (tenor), trombonist Ray Anderson, and pianist Amina Claudine Myers.

Dream Keeper may well represent one of Haden's greatest triumphs. He's blazed a global path, taking us from Africa to South and Latin Americas, through North America and Europe, and back to Africa again. Adding Langston Hughes's lyrics, as delivered by the Oakland Youth Chorus, to the eight-part, 16-minute-plus title suite only adds depth to the proceedings.

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as needed. Haden strategically lays out and highlights the many musical layers, further defining and adding shading and contrasts. Overall, the many solos—some only a few notes long—are bright, clear, and crisp. Those in supporting roles set themselves at the proper depths, as Bley's arrangements demand an airy spaciousness. The cooperative spirit so crucial to Haden's work carries right through to microphone placement.

_Dream Keeper_ is a gorgeous musical blend of five multi-part pieces, each representing a part of Haden's career. On the one hand are the austere and the brazen; on the other, the joyous, the succulent, and the celebratory. From free-for-all, anything-goes, totally improvised solos that are spirited, energetic, and, yes, abrasive, Haden strategically moves us in and out of straight-ahead and bebop riffs, melding each note within his (and Bley's) proclivity for and fondness of Latin, Spanish, and Mexican forms.

As always, Bley's quirky, witty arrangements leave one pleasantly satiated. While _Dream Keeper_ delivers bountiful solos throughout, including, most notably, Haden's in the suite's opening section, Redman's delivered during "Nkosi Sikelel 'I Afrika" (Anthem of the African National Congress), and Anderson's and Marsalis's during "Spiritual," there is also a tremendous amount of well-constructed, well-thought-out ensemble playing.

I can't say enough about Haden's ethics or his sense of decency, and his willingness to unite such sentiments inseparably with his musical mind. _Dream Keeper_ is an extraordinary accomplishment with just one problem: it lasts only 48 minutes.

—Jon W. Poses

**THE MANHATTAN PROJECT: The Manhattan Project**

Wayne Shorter, tenor, soprano sax; Michel Petrucciani, piano; Gil Goldstein, Pete Levin, keyboards; Stanley Clarke, acoustic, electric bass; Lenny White, drums

It might be unfair to label this session, recorded live in a New York studio, the newest Weather Report. Then again, it might not.

Drummer Lenny White (an ex–Weather Reporter) has assembled an acoustic and electric sextet capable of delivering straight-ahead material and even standards—"Stella By Starlight," "Good Bye Pork Pie Hat," and "Summer-time," for instance. Also contributing are Wayne Shorter, Weather Report co-founder and anchor, and athletic bassist Stanley Clarke, who has certainly earned a place in the spotlight through his fusion antics as well as his lightning-fast fingers. Compositions include the late Jaco Pastorius's (also of W'F) "Dani" and Shorter's classic "Nefertiti." The keyboard-laden ensemble incorporates Michel Petrucciani on acoustic piano and Gil Goldstein and Pete Levin on synthesizers.

This, to say the least, intense album comes at you with big sounds, many layers, and a maze of electronics. The date is intelligently mixed if emphatically bright. High-end frequencies are stressed throughout, even in Clarke's bass solos (as on "Dani," where he plays a lot of treble-range leads). This aural strategy doesn't necessarily detract from the overall picture, but be forewarned. Still, there's a richness of tone, coloring, and shading heard throughout _The Manhattan Project_.

At its best, this session engages one's interest and comes across as technically and musically complex and intricate, filled with intriguing and seductive improvisational moments. Just when you've written it off as an ill-conceived "superstar" session, Petrucciani will fool you with some sterling playing, such as his bluesy solo on "Stella." On the same track, Shorter's soprano sax commands deserved attention. Clarke, too, when he plays acoustically, delivers some stunning solos. When these three take charge and dominate, _The Manhattan Project_ succeeds.

At its worst, however, _TMP_ is a strained, overwrought, heavy-handed exercise in electronic power, particularly when White pounds his drums and crashes full-tilt into his cymbals as on "Pork Pie Hat." In such cases, the music degenerates into instrumental rock-funk. At its weakest moments, _TMP_ lacks subtlety. There're just too many crescendos, too much melodrama, too much going on at one time. Such musical pyrotechniques belong on "Arsenio."

But let's be fair. These veterans do take fusion to a higher degree. After all, they've been at this since Miles Davis went electric nearly a quarter-century ago. Shorter, Clarke, White, _et al_., know more about so-called "crossover" music than just about anyone. Compared to, say, the Chick Corea Elektric Band, these guys shine. Still, there's just not enough real meat here. Sorry, fellas; back to the drawing board.—Jon W. Poses

_MCCOY TYNER: New York Reunion_

McCoy Tyner, piano; Joe Henderson, tenor sax; Ron Carter, bass; Al Foster, drums

It's not easy to say how the album will sound when you open it for the first time. A DADWAX pressing of _New York Reunion_ suggests that this is a good bet. The performance is full-bodied, the soundstage is wide, and the imaging is excellent. The result

McCorky Records has moved into the big time. In an impressive casting coup, they've recorded four _current_, still-vital jazz giants at the heights of their forms—McCoy Tyner, Joe Henderson, Ron Carter, and Al Foster, with nary an Oscar Peterson or an André Previn in sight. The result
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All but Al Foster last played together (with Sonny Rollins) in the Milestone All-Stars tour of '78, which I caught in Boston, and during which Tyner seemed ill at ease; I remember him playing cold and stiff. New York Reunion catches Tyner, as well known for the damage he does to a Steinway in a single evening as for his consummate musicianship and never-flagging seriousness, in a much more mellow, reflective mood. Still, the standards are given tough readings, "What Is This Thing Called Love?" turned inside-out in an exploded-chord version that cooks hard and fast. Originals by Tyner, Carter, and Henderson are more wry and philosophical; Tyner shows a good bit of humor, something not always obvious in his playing.

But what a band—Joe Henderson, with Rollins and Wayne Shorter one of the three most consistently interesting tenor men since Coltrane's death, is so relaxed and so musical he could be supported here only by the perfect rhythm section of Ron Carter and Al Foster. These two lay out, however, on Monk's "Ask Me Now"; Henderson's long, unaccompanied introduction is all hunting-horn tribal tenor, magnificent trills and honks, totally unpredictable, totally jazz. (And you know you're in good technical hands when the ambience around Henderson's horn doesn't change a bit when Tyner's piano comes in.) The date's synergy beggars belief.

Ron Carter's dramatic, oft-covered (by Carter, at least) "A Quick Sketch" is drawn loosely here, though the tune was better handled on Herbie Hancock's 1982 Quartet album. Tyner's "Home" is a classic, if new-minted for this session, '60s Blue Note jazz tune, urban and intimate by turns, serious and playful, with meaty playing throughout, all à la Horace Silver at his best. It fades out tantalizingly at the end, but the CD is almost 75 minutes long.

In fact, the entire date is reminiscent, in the best ways, of all those amazing Blue Note recordings of the '60s, for which label all but Foster recorded at the time. There's that same rightness, that seamless fit of tunes and players, players and each other, and all of that with recording technology, with one big exception: producer David Chesky far outdoes Rudy van Gelder. Listen to the lower registers of Tyner's piano in "Miss Bea," effortlessly spreading and deepening as Tyner explores the piano's range. No vintage Blue Note ever sounded this full, this real, this good.

Like all Chesky Jazz recordings so far, New York Reunion was recorded with a single main stereo mike and judicious spot-miking; it's a new reference standard in both music and electronics, and the perfect audiophile recording: one so well-made that even the dweebiest of 'philes can forget about all such things as sizzling cymbals, piano and drum transients, and vagaries of soundstaging. Because, folks, it's all been taken care of. All you have to do is listen to the music. Demonstration quality all the way down.

—Richard Lehnert
the fence. Perhaps the best and most heartfelt of the bunch ain't about men at all. "The Wildwood Rose," a touching remembrance of family singalongs with Grandma Maybelle Carter, captures the kind of female bonding that goes on while the guys watch football. One problem: The production here is too Nashville-slick for me, and reverb-happy engineer Leann Unger just can't leave Carter's powerhouse voice to its own devices. Still, if you knew the bride when she used to rock and roll, you owe it to yourself to catch this batch of country cookin'.

Jonathan Richman is another rocker turned good ol' boy. But the one-time Modern Lover makes the journey from Boston to Nashville by way of Pee Wee's Playhouse. Jonathan Goes Country succeeds precisely because the change of genre has coaxed Richman out of his "man-child" schtick. For the unconverted, even a toned-down Jonathan can be as insufferable as a sulking five-year-old, but if you can get past his wide-eyed whininess there's some genuinely funny stuff here. "Since She Started With Horses," a magnificently silly tale of playing second fiddle to a horse, includes this paean to equine love: "She'd buy betadine if she only had a dollar / and she'd sit out in the pasture if she only had a tail." Jonathan applies that same kind of wit to a few more of his favorite things: long-distance bus rides, Reno, Nevada, and the old corner store. Even the hypoglycemic sentiments of love songs like "You're the One for Me" are endearing because you can't help but believe that he really means this stuff. Richman also shows some surprising ability as an interpretive singer, especially on Ronée Blakely's "Rodeo Wind" and Porter Wagoner's "Satisfied Mind."

Sonically, the close-miked vocals don't quite mesh with the more laid-back instrumental tracks, but otherwise the CD's not too bad. But the musicianship, with help from Nashville pros like Clinton Thompson and Tom Brumley, is first-rate, and Jolo knows his way around the fretboard of a Strat, too. While I'll be the first to admit that Jonathan Richman is an acquired taste, overall, this is by far his strongest record since 1983's Jonathan Sings.

Quite frankly, Country Joe McDonald sounds a little surprised to have made it to 1991, and he's clearly got a lot to get off his chest. Superstitious Blues is a back-to-basics record, spare, bluesy, and almost haunted. There's no 'Feel Like I'm Fixin' to Die Rag' here; McDonald seems so intent on getting things out in the open that it almost doesn't matter whether anyone's listening. The result is an intensely personal and wildly uneven album, with a few touching moments and some that are just embarrassing. "Eunicita," to name one, would make Rod McEwen puke, while "(Rock) Cocaine" deserves a decent burial in one of those public service announcements about the dangers of fried eggs. Stuck at the end of the album are a couple of small gems: "Clara Barton" and "Blues for Michael," a haunting tribute to guitarist Mike Bloomfield. In keeping with Holt's Law, this CD is sonically head and shoulders above the other three. The recording by committee is straightforward: just guitar, vocals, and the four walls. There's a "reach out and touch it" quality to this recording which the others can't match. But if you bring your friends over to hear this one, be merciful and start with the last two cuts.

Jerry Jeff Walker's Navajo Rug is worth buying just for "Nolan Ryan, He's a Hero to Us All." This icon-worshiping ballad, complete with career statistics, is so hokey it's irresistible, even for a Mets fan. Cut from the same melodic and narrative cloth as Ray Stevens's "The Streak," it's the perfect accompaniment to yet another no-hitter, and almost makes up for "Mr. Bojangles." The rest of Navajo Rug is like an old pair of boots: nondescript, comfortable, no scorpions inside. Still, it's refreshing to hear a lyric that refers to Conway Twitty that's not a punchline. Vocally, Walker doesn't so much sing (mercifully, if "Rocking on the River" is any indication) as narrate to a sprightly country backbeat. This is one time I won't complain about studio processing: it's for voices like J.J.'s that the Lord created reverb. Walker's message here is simple: It's great to be alive (well, most of the time), and in any case it beats the alternative.

As a listener who generally likes 'em black, blacker, and blackest, these records were a refreshing change. Maybe a little affirmation's not a bad thing after all. If I had to recommend one, I'd say grab I Fell In Love if you want to get up and dance, or Jonathan Goes Country if you need a laugh. Unless, of course, ol' Nolan's pitching tonight.

—Allen St. John

ELVIS COSTELLO: Mighty Like A Rose

Like a lot of you, I got my first dose of Elvis Costello on that near-legendary "Saturday Night Live" performance. Thoroughly shit-faced and determined to beat John Belushi at his own game, E.C. howled and thrashed his way through "Radio, Radio" like an anti-matter Buddy Holly from a rejected "Star Trek" script. I was transfixed. Wondering what all that racket was, my mother came in from the kitchen and reacted as though she'd seen a cockroach.
crawling across the linoleum. I was hooked.

It's too bad that Mom isn't around to hear Mighty Like A Rose. Here an older and perhaps wiser Elvis (he's 36) faces down a midlife crisis the size of a Peterbilt. Feeling the first pull of the downhill slope, E.C. turns his poison pen on himself and in the process makes Camus sound like a party guy.

Set to a deconstructionist Beach Boys beat, the album's opener, "The Other Side of Summer," should find its niche with the guys who wear sandwich signs saying "Repent!! The End is Near!!" and the MTVskis who liked the convertible and the cute girls at the beginning of the video. In case we missed the news, Elvis provides us with a laundry list of society's ills from crack to ocean pollution and back again. Smear on some sunscreen, pop it into the tape deck, and watch the used syringes wash up on the beach. But when he throws in "Was it a millionaire who said 'Imagine no possessions'?" the barb isn't aimed so much at the late John Winston Ono Lennon as at the whole rock-star business in general. Present company included. And to pop-rivet the reference closed, "Hurry Down Doomsday, The Bugs Are Taking Over" chucks in "Forget about Beethoven, Rembrandt and Rock and Roll... /Forget about Buddha, Allah, Jesus and Jehovah," echoing Lennon's "God" from Plastic Ono Band. Rounded out by the self-explanatory "How To Be Dumb," the first act of Mighty Like A Rose could be dubbed "Apocalypse Right Now:"

For Act II he could borrow "What the World Needs Now" from Burt Bacharach and plaster on the subtitle: "But You Don't Always Get What You Need." The remainder of the album (with the exception of "Invasion Hit Parade") is a string of sort-of love songs filled with missed connections and lovers no longer loveable. That isn't exactly virgin territory for Costello, but there's a healthy dose of self-recrimination in each of these songs. Try these lines from "All Grown Up": "But look at yourself / You haven't earned the weariness / that sounds so jaded on your tongue"; or this couplet from "After the Fall": "You've changed but not for the better babe / I'd tell you why but what's the use / Cos it's the same kind of pity / A drunkard gives as his excuse." Sure, it's risky to take lyrics too literally, especially from as slippery a writer as Elvis. But before you start second-guessing your second-guessing, check out "Broken," by E.C.'s wife, Cait O'Riordan. It's as straightforward and confessional a song as anything he's ever committed to poly carbonate. And on this ballad that's as lovely as it is bleak, he testifies, not once but twice, "But if you leave me then I am broken / And if I'm broken only death remains." Does that sound like somebody who just got back from a Leo Buscaglia seminar?

Ultimately, the trouble with saying "Life sucks and then you're dead" is that it sort of ends the discussion. So Elvis leaves himself a loophole on the album's closer, "Couldn't Call It Unexpected No.4." On an album where the rockers sound constipated and the slow songs just ooooze, it's the musical light at the end of the tunnel. Lyrically, it's a half-step back from the abyss. "Please don't let me fear anything that I can't explain / I can't believe I'll never believe in anything again," he sings in a voice quite free of irony. Quite a change from the guy who ended My Aim Is True by repeating "Waiting for the end of the world" to a fadeout.

Nobody's ever bought an Elvis Costello album for the sound, and Mighty Like A Rose is no exception. Mighty sounds a lot like Spike (also engineered by Kevin Killen), which is to say compressed, no low end to speak of (don't be fooled by that opening bass riff), and a narrow soundstage. The one piece of good news is that Killen took something off the top, so the upper-midrange brightness which was a problem on Spike is a little less of one here.

I'll leave you with one of Mom's favorite all-purpose warnings: "Watch yourself." Like straip throat, Mighty Like A Rose has a way of creeping up on you. Play it 30 or 40 times and pretty soon you'll find yourself kicking the dog and buying another piece of the Rock. Am I suggesting you do that? Is this a great album as well as a great sales tool? "No" on both counts. As soon as I pulled Spike out for a sound check, I realized that this year's model just doesn't stack up. Our final score: major artist, minor album, important new direction, and a beat you can't dance to. But the $64,000 question is still up on the board: Can Elvis Costello's newfound fear fuel his music the way his high- octane anger always has? Stay tuned.

—Allen St. John

BONNIE RAITT: Luck of the Draw
Capitol C2-9611 (CD only). Don Was, Bonnie Raitt, prods.; Ed Cherney, eng. AAD. TT: 53:45

When Luck of the Draw arrived, I realized I'd sat down to listen to my copy of its predecessor—the surprisingly, phenomenally popular Nick of Time—only once. Still, I've heard the album a hundred times, and willingly—it's everywhere, and it's been everywhere for a long time now: on the PA system at the gym, in my friends' car's tape decks, doing its slow grind out of hidden speakers in half the shops in town. Nick of Time is great music, and a per-

6 Play the record over and over, I mean. I cannot, in good conscience, condone cruelty to animals. People, maybe. Animals, no.
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fect pop product: each song inexorably leads to the next, the invariably medium-tempo arrangements bearing only the barest hint of the subtle calculation that must have been at the back of producer Don Was’s mind all the time. The album insinuates itself slowly while your back is turned, like a full-blown love affair growing out of a long-term friendship, until you just can’t live without it. An amazing piece of work.

**Luck of the Draw**—a perfect title for an album in the unenviable position of following such a monster hit—is both more and less interesting, works both more and less well than *Nick*. The songs are far more varied in tempo and tone, but only one of them is as finely crafted as anything on *Nick*; the resulting disc sounds fresher, more spontaneous, but doesn’t hang together as an album. **Luck of the Draw** sounds merely like a bunch of songs, just one damn thing after another; any individual song might be more interesting than any of *Nick*’s on first or second hearing, but aside from Bonnie’s own “All At Once,” there’s nothing here as good as “Nick of Time,” “Have a Heart,” “Thing Called Love,” “Love Letter,” or almost anything else; and I can’t imagine playing Luck even ten times, either as foreground or as background, let alone a hundred.

But it’s a lot more than a turkey feather in Bonnie’s composer’s cap that the album doesn’t really take off until track 4, the first of her own songs, “Tangled and Dark.” She saves the gutsiest, raunchiest grooves for her own tunes, and does ‘em proud, sounding a lot like John Hiatt’s recent albums (she covers Hiatt’s good-natured “No Business” here). The songs she’s chosen for Luck are very much in the Raitt tradition: half of them challenges to men to measure up to her own strengths, desires, and demands, the other half requests, direct or not, to men to tell their women the truth about what they feel and, as often as not, what they don’t feel. It’s to Bonnie’s credit that, with each album, the former sound more accurate and less posturing, the latter less pleading, more leading.

The duet with Delbert McClinton on “Good Man, Good Woman” simply doesn’t work, the two singers sounding *sin simpatico*, as if in different recording studios a thousand miles apart. It was a brave thing for Bonnie to duke it out with one of the best R&B singers in the world, but they’re not even in the same ring. The title song is the weakest on the album (that’s a sneaky old album-titling trick dating back to Dylan’s *Highway 61 Revisited*), but it’s followed by the strongest, and the best thing Bonnie’s ever written: “All At Once,” a moving, exhausted outpouring about family breakup and loss. And in “One Part Be My Lover,” Michael O’Keefe provides such powerful lyrics about jockeying for romantic position, so fully in the Raitt tradition, that it augurs well for their recent marriage: “He’s like a boxer who had to retire / After winning but killing a man / He’s got all of the moves and none of the courage / Afraid to throw a punch that might land.”

Producer Don Was’s analog sound is as fat and full as Nick’s, with realistically sized drums if a less than convincing soundstage. The gutbucket tunes (“Tangled and Dark,” “Come to Me”) are recorded to total satisfaction.

**Luck of the Draw as Nick of Time II?** Not hardly. Better than the last four or five albums Raitt made for Warner Bros.? Definitely. Worth your while? Absolutely. —**Richard Lehner**

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**R.E.M.: Out of Time**


By their own admission, they’re bored little puppies. So everyone swapped instruments, drafted guitarist Peter Holsapple as utility player, and distributed Warner Brothers’ money between funky-but-top-q studios (Bearsville, Paisley Park, and two Georgia houses for strings and overdubs), imaginative guest artists (KRS-1, the B-52s’ Kate Pierson), a whole slew of string and horn players, and cause-related art. (The Limited Edition CD Portfolio, packaged in a hardbound photo album tied with ribbons, contains ten specially commissioned postcards of flowers, fruit, and band memorabilia plus a “woody” CD picture disc in a velum sleeve and credit sheet, all printed on recycled paper. Vocalist Michael Stipe has been writing articles on saving the environment. Tips: Don’t buy disposable packaging. Ride bikes.)

As you’d expect with a mastering job from Precision Lacquer, the whole recording/arranging/production end of things is more than up to snuff. *Out of Time* has good imaging, good separation, faithful reproduction of instrument sound and texture, all that. The result is you can hear more of what R.E.M. is going on about, which is one useful byproduct of major-label production. Like Steely Dan, R.E.M. never prints album lyrics, and no doubt designed to cut through the band’s signature instrumental jangle—trademark, but reminiscent of 40 million windchimes in a belfry on systems not easily able to handle HF distortion. Stipe’s equally trademarked vocals are delivered straight from the nose. Since he doesn’t have a lot of breath support or much range, meaningful or not, the lyrics—hence anything the song’s about other than texture—are frequently lost in space.

Not that that doesn’t happen with the collection of pop tunes here. You’ve really got to
listen to make out what rapper KRS-1 is beating out in "Radio Song," and phrases like "blackbirds backwards" swirl up and sink in "Half a World Away" like letters in alphabet soup. With the generally sterling production exhibited here and on the previous big-budget album Green, however, now we can assume that if we don't get the drift, the vocals or the mix aren't necessarily screwed up, the band just wants us to listen harder. Or the music is the message. Or the words are meant to be heard as delightful random found objects (R.E.M. is an art band). Swell, but sometimes that may be a dangerous assumption: The peppy "Me in Honey" tosses off lines something like "There's a fly in the honey / Baby's got a baby with meee-ee-ee." Delivery is everything; snuck in fast and slightly swallowed, lines like these are subject to wild misinterpretation if this track doesn't, in fact, have anything to do with someone's girlfriend about to make the singer a dad.

What this album is about is love: happy, sad, ongoing, finito, etc. At a guess, it's also a homage to Haight-Ashbury, where proto-R.E.M. hippies rocked the cradle and brought forth pop songs that embodied everything from stupid fun, war protest, inner vision, a more deeply revealed first person, and enchantment with the Mellotron and fuzz guitar. Certainly there are stylistic references to lots of bands spanning the last 25 years ("Near Wild Heaven" references everything from the Beach Boys through Herman's Hermits), and anyone who puts on a full string section, orchestral arrangements, and spoken intros somewhere between The Velvet Underground's "The Gift" and Days of Future Passed ("Texarkana") and doesn't expect the obvious reference to the Moody Blues is either about 11 years old or pulling your leg.

The tracks themselves make up a very mixed bag. "Radio Days" and the heavy-airplay single "Losing My Religion" are outstanding. (For Green, the busy-busy Warner Brothers broke "Orange Crush" and placed "Stand" as the Fox TV series theme song for comic Chris Elliot's semi-humorous "Get a Life." While we can bemoan the new commercial reach of a band which formerly was never heard more than 1.8 miles from the transmitter of WUNI, let's not be selfish: these are good, even important, songs. "All Along the Watchtower" helped shape the minds of the '60s; why not give R.E.M.'s vision a peace of chance today?)

Three other tracks ("Shiny Happy People," "Low," "Me in Honey") are pretty good, or at least interesting. "Country Feedback" is as miserable, fed up, and willfully obstructive as David Byrne beating up on his therapy-junkie girlfriend ("No Compassion") and Richard and

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Linda Thompson giving a no-hope pal the push ("I run a steamship, I don't run a mission," Linda wails, ratcheted beyond all endurance in "Hard Luck Stories"). The other five tracks spread their moments of intrigue pretty few and far between; they're undistinguished and indistinguishable (another result of larding everything with strings).

Five out of eleven would make a tough call for your fifteen purchase bucks, but the clear excellence of "Radio Days" and "Losing My Religion" make Out of Time a must-have. The brilliance of throwing a testifying guest rapper up against the radio surf to deliver stupid-fresh credibility, social commentary, humor, and a beat shows these four Georgia boys and an L.A. hipster have got the imagination it takes. Don't think so? Take a chorus of "Baby baby baby/hey hey hey" and see what you come up with.

On the mystical front, "Losing My Religion" is a lucid, transcendent, perfectly crafted piece for everyone who ever broke up with someone who really mattered, lost a friend, lost a faith, a hope, a country. Everything works, down to the tiny, fading mandolin at the close, evoking, with its echoes of the Civil War and the last days of the American Frontier, historicity, commonality, and the grandeur of a brighter day, fresh with hope and promise, gone now with the wind.

On a related note, just how bored are the R.E.M.ers? Bill Berry, Peter Buck, and Mike Mills linked up with Warren Zevon one lost night in Sherman Oaks last year to cut an album of white boy blues (Hindu Love Gods, Giant Records 9 24406-1, LP; -2, CD). If your idea of a good time is to listen to a former Everly Brothers sideman (Zevon) and three down-home boys revisit "Walkin' Blues" à la the electrified Tom Rush or The Blues Project, this one's for you. No worse than Long John Baldry, the album includes a fine reworking of Woody Guthrie's "Vigilante Man" and an enthusiastic assault on Prince's "Raspberry Beret." Stipe wanted to make it, but he went out for dinner and the album wrapped before he got back. It says here.

—Beth Jacques

TANITA TIKARAM: Everybody's Angel
Reprise 26486-2 (CD only). Tanita Tikaram, Peter Van Hooke, Rod Argent, prods. AAD. TT: 48:11

Twenty-one-year old Tanita Tikaram scores another hit with this album, her third for Reprise. Recorded for the most part "live" in the studio (actually at four different studios, whose sonic signatures are discernible), the arrangements are tighter and leaner, resulting in music less abstruse than before. The lyrics are more direct and a bit less effusive, although I still have trouble with them. Tanita's talents

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as a songwriter, arranger, and lyricist continue to impress me, as does the production quality, her association with Peter Van Hooke and Rod Argent proving to be a step in the right direction. I especially appreciate the attention paid to dynamics in the songs, a quality lacking in much popular music these days. It's refreshing to hear music played at other than \textit{fff} levels; music which builds in intensity from beginning to end. Communication of emotion in music involves more than achieving certain sound levels! Tanita Tikaram understands this, and her music reflects it.

Much of the music has a strong r&b feel, especially "Deliver Me," "To Wish This," "Sunface," "This Stranger," and "Me In Mind." The Section, a trio of trumpet/flugelhorn, violin, and sax, figures prominently in these tunes, adding a distinctly jaunty flair to the arrangements. With Mark Isham, how can you go wrong? Jennifer Warnes (who, along with Leonard Cohen, is a strong influence for Tanita) makes a guest appearance on the album's opening cut. Her angelic voice, heard in duet and harmony vocal with Tanita, adds an intriguing texture to this song of anxious love. "Deliver Me" sounds as if it could have been lifted from an early Van Morrison songbook. The gospel-like female harmony vocals and Mark Creswell's tasty guitar fills fit the song perfectly. Rod Argent's angry Hammond is heard on "Mud In Any Water," a bluesy tune which provides an effective musical change of pace. Jennifer Warnes is heard from again on harmony vocals here, and lead guitarist Mark Creswell adds some appropriately angry licks. After a precious and delicate intro to "Sunface," Tanita turns up the heat and emotion, singing with a voice so warm it wraps around you like a comforting blanket on a chilly night. The bouncy "Never Known" follows, instantly breaking the somber mood established just minutes before. One of my favorite songs, "Swear By Me," is a no-nonsense tune ushered in with a stunning intro.

The recording is excellent (check out the layered vocals on "Me In Mind," or the drums on "This Stranger"), its analog heritage not betrayed in the transfer to digital. I only wish an LP was available, as with \textit{Ancient Hearts} and \textit{Sweet Keeper}. The album closer, "I'm Going Home," is exceptional. You're right in the recording studio with Tanita, her band, and a small string ensemble. The immediacy of her guitar playing and the intimacy captured in the recording is stunning. Each nuance in the process of making music is revealed here. Real instruments (no synthesizers), real voices, and real emotion captured in a recording that does justice to the music. What more could one ask for? Buy this disc!

—Guy Lemcoe

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MANUFACTURERS' COMMENTS

VAC & Golden Dragon

Editor:
Our thanks to Sam Tellig for his very kind comments on the VAC PA90 90W monophonic amplifiers and Golden Dragon vacuum tubes. We feel that Sam has presented a fair and accurate description of their sound, which we feel to be among the finest ever.

It is worth noting that our dealers routinely match VAC with more demanding, wider-bandwidth speakers than those used in this review. Among the speakers routinely driven are Apogee Stages, Audiostatics, Avalon Ascents, B&W 800s, Martin-Logans, Vandersteen 3s, and Yankee Ribbons, to name a few. Full rated power (class-A) is available from one to eight ohms, and the power supply is regulated (even for the output tubes). Don't be afraid to challenge a VAC amp; it may surprise you.

Preference for triode or ultra-linear output modes depends on the listener and the system. VAC amplifiers are easily switched and both are worth auditioning.

Sam's instincts are correct; the KT77 does indeed improve every aspect of the VAC PA90 (as a few lucky owners can attest), and many other EL34-based amplifiers (this was a popular swap for Marantz 88s). Sam may also prefer the sound of KT88/6550A-based amplifiers, such as our VAC PA60. The KT88 traditionally provides more robust and energetic low frequencies than the more delicate and detailed EL34.

Now, I need to clarify my remarks to Sam regarding the Quicksilver amps. The Quicksilver is a well-made amplifier that runs its tubes in a fairly conservative fashion. Golden Dragon tubes well complement and enhance its fine characteristics. Our full warranty stands for KT88s used in Quicksilvers, and I do not see why any tube distributor would do otherwise. When Sam's KT88 failed I was surprised, and suggested that the amp should be checked if a second tube were to fail in the same amp. This is a sensible recommendation even for a VAC amp, and this is the point I was inarticulate in making. No tube, transistor, capacitor, resistor, or complete amplifier is infallible.

With respect to tube reliability, I can honestly say, after 20 years of experience, that I have had more outright failures with solid-state amplifiers than with tube amplifiers, and very few of either. I think it seems worse because people are conditioned to expect tube problems. Large sums of money have been spent over the past 30 years to push this notion, one of the original marketing claims for transistors. Of course, a few tube designers do push beyond conservative limits and experience excessive failure rates, but this certainly need not be the case. Output-device failure is actually more easily remedied with tubes. Add to this the simple fact that tubes are still more accurate and musical, and the case is made.

Of course, tubes can fail in and of themselves, but if well made they really are extraordinarily reliable, particularly after passing the "infant mortality" stage common to all components. Considering Golden Dragons sold through June 1991, we have observed a total failure rate (noise, vacuum loss, etc.) of less than 1%, even including tubes operated beyond ratings. This compares favorably with the best tubes of all time, yet we're working with the factory to improve it further. Development is ongoing. When a failure within warranty occurs, that tube is replaced promptly. We do not want any customer to keep a part that is not performing in spec. We ask that customers return rogue tubes at their convenience so that the failure modes can be analyzed as part of our continuing improvement efforts.

For the record, Golden Dragon power tubes are the brainchild of PM Components, a British firm, and are contractually exclusive improvements (sound and reliability) on the standard Chinese tubes available everywhere else. More than three years have already been devoted to their development. To the best of my knowledge, they are the first tubes ever developed using both subjective and objective criteria, and are serious contenders for the title "best ever". As exclusive US distributor, we're pleased to note that already one other US manufacturer is recommending to "use only genuine Golden Dragon tubes."

Finally, a word about paranoia and tubes. I routinely let several VAC amps run in test over nights and weekends, through thunderstorms, etc. While we don't recommend this, the worst I've seen so far is a blown fuse.

Kevin M. Hayes
Valve Amplification Company, Tubes By Design

Vacuum Tube Logic

Editor:
In the first instance, we want to state that we were not a party to Sam Tellig's recent "view" (de-view, anti-view, for it certainly is not a review), in that we did not supply the equipment to Sam. In the case of the 225s, he purchased them from a dealer; in the case of the
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Stereophile, September 1991
70/70, Sam was loaned a sample that was sent to a dealer intended for photography only, and sent to the dealer in haste for an advertising deadline.

By way of relevant comment, we are at a loss to make a reply of much relevance, since this is a very rambling, uninformative piece of journalism, as seems to be rather typical of Sam’s writing style of late. [For shame.—Ed.]

David & Luke Manley
Vacuum Tube Logic

JM Lab Micron loudspeaker
Editor:
First and foremost, I would like to say “thank you” to Stereophile for the review of our Micron speakers.

Our thanks go far beyond the normal polite reply of a satisfied manufacturer. All of us at JM Lab, France, want to express our sincere appreciation to Dick Olsher and John Atkinson for the time and care utilized in this review. We all know that there is no easy way to be fair; fairness is an ethic. It calls for at least two active ingredients: a deeply rooted taste for the truth and possibly an infinite dose of positive energy to pursue it. Probably also a small trace of amnesia, since, of course, the closer we get to the truth, the clearer we see how much more has to be done to get closer. Our company is truly and fully invested with funds, personnel, and spirit for the creation of loudspeakers. That is all we do here and, from the engineering of the smallest components to the final auditory testing, there is an incredible amount of work, investigative research, and background experience to be applied. What we truly appreciate as a manufacturer is to see that Stereophile and its reviewers are ready to match our efforts with a similar, no-stone-left-unturned approach. John Atkinson is expert at technically framing the character of a speaker, and while Dick Olsher’s tongue is somewhat tart at times, the music, after all, is essentially palatable. What counts is that the quest is the same.

As we have a chance to do so, I would like to address some technical information. After the beautifully mixed review given to the Focal Aria 5, Kimon Bellas, co-designer with Joe D’Appolito, initiated a research program on tweeters with our chief engineer for the purpose of addressing this “complicated high-frequency, presumably audible ringing imposed on the tail of the Kevlar-tweeted speaker’s impulse (fig.3),” as so perfectly described by John Atkinson. It very quickly appeared that the Kevlar itself was not responsible (after all, it is the same material used in the much-appreciated bass-midrange drivers), but was instead caused by undesirable resonances coming back through the Kevlar concave dome from the top of the pole piece and, to a much lesser degree, from the inside of the magnet. A change in the profile of the top of the pole piece, the addition of an ultra-thin pad of a very special damping compound (with a controlled absorption spectrum) on top of the pole piece, and the insertion of a foam donut inside the ferrite brought spectacular improvement. Simultaneous with this effort, a titanium version of our concave-dome tweeters was being developed by our research and engineering groups, and this improvement was naturally incorporated into the new titanium tweeters as well as all Focal tweeters of the K (Kevlar) and the T (titanium) series. Our top-of-the-line Utopia and the Micron minimonitor are the first JM Lab speakers to incorporate the new titanium tweeter, and we are sincerely pleased with its success. We will continue to use the Kevlar tweeter in other models, as we think there is a need for both.

It is interesting to note that, in his remarks, John Atkinson somehow discovered the exact option we chose in order to design the Micron with a near-anechoic target response. We indeed feel that this approach, taking into account the total acoustical energy radiated into a three-dimensional field, is the best way to produce a small speaker offering a truly credible tonal balance in a normal listening environment.

Jacques Mahul
President, JM Lab, France

Tube Research Labs
Editor:
Thank you for taking the time to stop by the room we shared with First Sound at the Summer CES. Thanks also for mentioning Tube Research Labs in your show report [in Vol.14 No.8].

Since we were not able to talk with all the people who stopped by the room and our literature was always gone early, please allow us to briefly clarify a few points mentioned in the article. The Sound-Lab speakers used at Summer CES were A1s, not A3s. The amplifier shown at the show uses 20 KT99 output tubes per channel, not KT90s. Most of the remaining 28 tubes per channel are used for active tube regulation in the power supply. Total tube complement for this amplifier/power supply is 96 tubes. The weight of one amplifier chassis is 180 lbs while one power-supply chassis weighs 205 lbs, for a combined two-channel weight of 770 lbs.

Framed egg and Tube Research Labs amplifiers—we like it.

Paul Weitzel
Tube Research Labs

Stereophile, September 1991
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Stereophile, September 1991
Nonspeaker Ribbon Reference Three

Editor:
In response to the *Stereophile* Winter CES report in Vol.14 No.5, we felt compelled to correct the information given. We certainly have no dispute with DO's glowing words of praise regarding the sound of the Nonspeaker Ribbon Reference Three. In fact, we very much appreciate the considerable time DO spent listening and investigating the system.

The driver complement on each Granite baffle is as follows: a ribbon tweeter flanked by three ribbon midranges above and three ribbon midranges below the tweeter. This is significantly different from a single midrange flanked by tweeters: an arrangement which, due to the wavelength of the frequencies reproduced by the tweeter relative to the distance between the two tweeters flanking the midrange, causes some very undesirable cancellation and imaging problems.

Further, these "midranges" are really more like "full ranges" in that they: a) operate from 100Hz to beyond 15kHz, b) are designed with flat impedance and rolloff frequency choke, and c) are fed directly from the amplifier for maximum damping and resolution. The ribbon tweeter is "blended" into the "full ranges" over an octave or so... thereby eliminating the crossover point. All drivers and passive components are hand-measured and matched to tolerances of at least 0.01%. So the system operates as a direct-feed, crossoverless, single line-source ribbon dipole well beyond the four most critical octaves of reproduction (160Hz-1560Hz).

While DO did substantiate that the Nonspeaker Ribbon Reference Three, with its inert Granite baffle, justifies its $8800/system price tag, it is worth noting that we displayed another system: the Ribbon Reference Four. This is essentially the same system but with four ribbon "full ranges" mounted below the ribbon tweeter on each Granite baffle and a single multiple-wall (to break up resonances) Granite subwoofer instead of two. The primary difference between these systems is $2200 in greenbacks. Ribbon Reference Four's system cost of $6600 makes this technology available to a greater number of music lovers.

In closing, we would like to thank you for publishing this letter and compliment you on the very substantial improvement in the quality of this magazine over the past few years. You may recall our last letter back then, when we complained about show coverage, editorial comment and content, poor paper/ink/pack-complained about show coverage, editorial comment and content, poor paper/ink/packaging, etc. Quality is, after all, something we should seek in our endeavors; when we achieve it with all the necessary effort required, the recognition of that effort is well deserved. Hats off to *Stereophile*!  
Ken Mavrick  
Designer, Nonspeaker Division, Mavrick Audio

---JA

ListenUp Maughanbox

Editor:
After reading Lewis Lipnick's excellent review of the B&W 800 speakers in the June issue, we feel some comments are in order regarding the use of our proprietary bass alignment filter (called the Maughanbox by ListenUp after its designer, Gordon Maughan).

It is appropriate to describe briefly the exact effects we hear when inserting the Maughanbox into the signal path, as compared with no bass equalization whatsoever. These comments apply equally to B&W models 800, 801, and 802, as well as a number of other speakers with which the Maughanbox has been tested (eg, Magneplanar MG 3.3s, Apogee Divas, Avalon Eclipses and Ascents).

- Bass quantity and extension are increased (the expected effect of the filter).
- Image focus improves (that is, the size of instruments or soloists becomes more compact and more lifesize, not smaller than lifesize).
- The size of the reverberant soundfield increases in all dimensions: laterally, vertically, and front-to-back, with instruments layered more deeply into the soundfield and extending well to the outside of each speaker.
- The amount of what is commonly referred to as "air and space" around instruments increases. This is perceived differently by different people as either an increase in spatial clarity or, more commonly, as an increase in actual detail.
- The speakers are perceived to "disappear" more as sound sources and images are reproduced more free from the speakers themselves.

It should be stressed that the latter four effects (which would not be predicted from the function of a bass-alignment filter) are heard over and above what one hears with no filter in the signal path. With the stock B&W filter, by comparison, these effects are obscured because of the self-imposed limitations in build quality that B&W felt necessary to make. We were as surprised as anyone to discover these extra benefits from what would be expected by simple low-frequency equalization. We have performed extensive listening experiments that indicate these effects are not artifacts of our filter, but in fact are consequences of reproducing full bandwidth below 50Hz in stereo. For exam-
THE AUDIO GLOSSARY by J. GORDON HOLT

In the three and a half decades since the arrival of stereo, no one has done more than J. Gordon Holt to develop and define a consistent vocabulary for describing reproduced sound. This is actually two dictionaries in one: a glossary of subjective audio and a comprehensive plain-English guide to nearly two thousand technical terms. If you aren't exactly sure about "liquid" midrange or "hard" sound, or find yourself puzzled by an unfamiliar word or alphabet-soup abbreviation, you'll find a concise explanation in this handy, compact reference volume.

But watch out! When you least expect it, Holt's dry humor emerges. You'll learn that a cassette is "a small case," a chube is "a British tube," and a code causes "blockage of the dose." Whether you chuckle or groan, you won't be bored!

□ YES! Please send me The Audio Glossary!

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ple, in one test setup with Quad ESL-63s, the use of either the Maughanbox or stereo subwoofers (run in parallel with the Quads) produces identical improvements in image focus and reverberant soundfield size.

Because the B&W 800s are tuned to a higher resonant frequency than 801s, they have audibly less bass extension. For this reason, we made the decision to offer a choice of EQ curves to our customers. The stock B&W curve provides 5.5dB of boost at 25Hz. Our modified curve provides 6.7dB at 19Hz. From 50 to 80Hz, the gain of each curve falls below 1dB and reaches unity with less than 1dB difference between curves. In Lew's room, he felt that this difference was not preferable to the standard curve. In our listening room and with our setup, both Lew Lipnick and Scott Rundell of B&W America concluded that our 800s sounded better than any others they had heard. Since low-frequency amplitude response is so highly variable depending on room dimensions and seating position, customers may specify which curve they prefer.

For the benefit of your readers, we would like to share some of our setup procedures which will ensure optimum results with the Maughanbox. Positioning the speakers according to the "rule of thirds" (or sixths) and angling them inward both reduce excessive boominess. Substituting steel cones for those supplied with the speakers provides a general improvement in low-frequency pitch definition and clarity, as well as a significant enhancement of imaging precision. The Maughanbox should be located 1' (or more) away from the amplifier, as serious sonic degradation can be induced by a proximity effect.

We would all be naive to think that there would be no cost to inserting extra circuitry of any kind into the signal path. With speakers such as B&W 801s or 802s, most people have found that the net improvement in sound quality provided by the Maughanbox is so great that use of the box is almost not an option. In speakers with the bass output and resolving power of the 800s, especially in "tetra-wired" mode, we might agree that use of a bass alignment filter is more optional. Even so, users of our box have found useful improvements in this speaker's performance, especially when the Maughanbox is placed on cones over a ¾" marble or granite slab.

In closing, we would like to thank Lew Lipnick and the other good people at Stereophile for their consideration of the Maughanbox in the context of this review.

Charles E. Zeilig
International Sales Manager, ListenUp Systems

Rega wow & flutter

Editor:
It has only recently come to my attention that there was a mention in Stereophile about a possible problem with "wow & flutter" on the Rega turntables. I want to assure your readers and Rega owners that we are aware of no such problem. In fact, due to the construction of the 'table and the physics involved, the Rega 'table is one of the most "speed-steady" 'tables on the market.

However, if you use your 'table for 33 and 45rpm operation, the belt can become stretched out of shape. We suggest a separate belt for each speed, but only if you play a lot of 45s.

Other than a customer living in a very high-humidity area, which will also cause the belt to loosen, I can think of no reason why there should be a problem. Any customer having a problem can contact his nearest dealer or myself personally. If there is a defect, it will be replaced at no cost to the customer.

I would be very interested to know who started this rumor and why, before you printed it, you did not contact the distributor to verify the facts.

Rega turntables represent some of the best values in high-end hi-fi, with most of the Regas sold still in everyday use, now close to 17 years in the US.

Craig Gulley
Music for Others

The "rumor" is actually the wording of our "Recommended Components" entry for the Rega, based on ST's and my experience of the turntable experience which is admittedly now some five years or more in the past. I would welcome the opportunity of updating that experience.

—JA

Koetsu & buying secondhand

Editor:
We at Koetsu USA are finding it quite disturbing to see our devoted aficionados abused in the secondary market. Please remember that Koetsu cartridges have been manufactured since 1976. We recently examined a supposedly 6-months-old, 40-hour Rosewood Signature, purchased by a fan in New York for the reasonable sum of $500. Although it is worthless at present, it might be prized some day as an antique. It was in lovely condition for a 1978 model.

Our heart goes out to the innocent audiophile who paid for that unit on a C.O.D. basis.

1 I am amused to see some writers referring to "Pearson's Rule of Thirds," presumably following recent discussion of loudspeaker placement in The Absolute Sound. Readers should be aware this is a decades-old rule-of-thumb, which I, for example, heard expounded by Quad's Peter Walker nearly 15 years ago.

—JA

Stereophile, September 1991
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Any current model bought used could be a bargain. The best values out there will probably be on the recently discontinued Black Goldline. We have seen these being traded for under $200 in lovely condition.

Remember, Koetsu means light and pleasure. Enjoy your listening, play all your favorite records. Look for bargains, but do not hesitate to call for shipping instructions—(305) 698-6102—if you are buying on the secondary market. Buying used is always risky; we can help limit your exposure. William G. Karniol
President, Koetsu USA
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Michel Reverchon
Goldmund SA
Thursday, October 10

Arnie Nudell/Paul McGowan
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Thursday, November 7

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Stereophile, September 1991
I've just survived a weekend with some of the most remarkable folks in this industry: it was *Stereophile*'s annual Writers' Conference wherein we discuss the upcoming "Recommended Components" to appear in the October issue. JA tells me this is the fifth such conference since 1987, and a fine one it was.

Partway through the weekend I was struck by something: this is the only event in the world, as far as I know, where such a large group of informed writers get together to thrash out the pros and cons of what's best in hi-fi. And thrash it out we do! There's plenty of outright disagreement, frequently with personal attacks thrown in. No product makes it easily into the pages of "Recommended Components."

Manufacturers are known to cringe when they see the forthrightness of some of the criticisms made in a formal review, but that's nothing compared to what we say among ourselves. Of course, since no product is spared the whip, publication of the complete transcript of our sessions might result in marketplace paralysis. All hi-fi equipment has things wrong with it; at least one member of a group like the 16 writers present—and usually more than one—will have found those problems, and feel that they preclude a recommendation. If you believed what everyone in the group said, you wouldn't buy anything!

Some of the disagreement is philosophical. Peter Mitchell, who never saw a multi-thousand-dollar amplifier whose price he could justify were he spending the money himself, can't really get into the debate that takes place over Classes A, B, and C within amplifiers—according to his lights, all contenders are disqualified. Sam Tellig is similarly suspicious of high prices, rooted no doubt in his Yankee cheapskatism. Other writers can't get enthusiastic about any of our Class C and D recommendations, knowing how far they fall short of the best available.

Even more exciting is the debate over the latest digital products, not to mention the free-for-all loudspeaker discussion. With digital, there are always people like me who, no matter how attracted to the best in the latest processors (I'm currently using the $12,000 Stax), can't help but wonder why *Stereophile* keeps recommending the latest dramatic breakthrough when the last four years of "breakthroughs" still haven't caught up to analog. I suggested we recommend no more than one digital product each in Classes A, B, C, and D, with an explanation of the caution thereby urged on consumers when contemplating high-ticket digital purchases. I was loudly shouted down. After all, it was said, our job is to describe the product's performance, not tell people how to dispose of their income; they're perfectly capable of doing that themselves. I'm confident that last statement is true, but I still say we (the audio press in general) need to be aware of, and responsible for, the role we play in whipping up enthusiasm for breakthroughs which may be outmoded in only a year.

The last two years of loudspeaker development have seen enough changes that the relevance of *Stereophile*'s loudspeaker recommendations has gradually eroded, a problem addressed by JA in dramatic fashion, as you'll see when you read next month's issue. Never fear: the change is for the better. And when you read those recommendations, just keep in mind how much diversity there is among our staff as to what speakers should be recommended in each class. No one agrees 100% with the speaker listings in "Recommended Components," and some of us probably less than 50%. Does this mandate the need for personal audition, or what?

A highlight of the weekend was another free-for-all on *Stereophile*'s philosophy of equipment performance and review, and the question of what constitutes appropriate (or even mandatory) program material. The writers also showed themselves willing to sound off on the role of music reviews and features in the magazine—as usual, the discord was deafening.

*Stereophile* has been criticized in some quarters for lack of focus, an undetermined direction. If this weekend was any indication, *Stereophile*'s direction is the product of vigorous debate among many well-informed voices—and I feel most confident of the result. It even reminds me of the purpose of the First Amendment to the Constitution: for all our problems, the US has done pretty well with that tradition.

—Larry Archibald

*Stereophile*, September 1991
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