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LIVE FROM THE AUDIOPHILE SOCIETY

INFORMATION

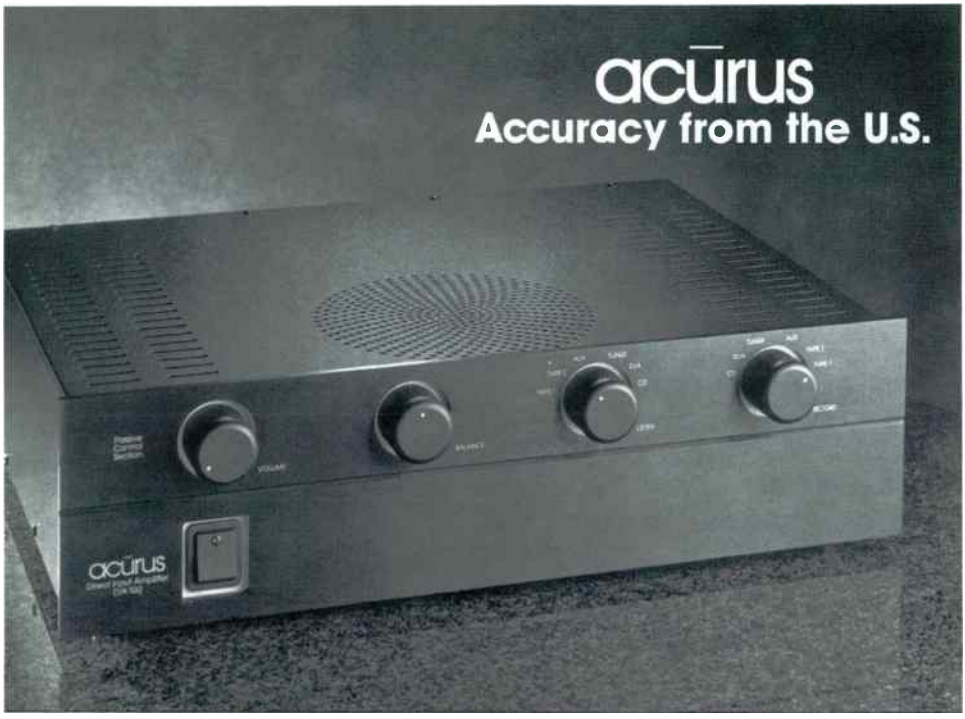
Alive & Kicking, But . . .

When the late Hy Kachalsky dreamed up *The Audiophile Voice* magazine last year, there were plenty of nay-sayers who believed that this project was much too ambitious for a bunch of amateurs and volunteers. Put out four high-quality issues a year? Get a reality check, guys! No way! Well, we showed 'em—we showed 'em they were right. We're way behind schedule (shades of the good old "underground" magazine days) and we apologize for that. BUT—and DOUBLE BUT—in terms of the editorial quality of this issue we have nothing to apologize for. We're very proud of it, and we're quite sure that you, our readers, will see we've got something special here.

To our subscribers, we ask for your patience. Your subscription dollars will get you four full issues of the best magazine we can put out. No phony double issues to make up for lost ones. No skimping. We may show up late, but we'll show you a good time.

Having said that, please keep in mind that we're not professional writers, editors or publishers. We're audio junkies just like you, with day jobs and families we care about. We've got *lives*. So here's what we're leading up to: How about taking some of the burden off us? Be an *Audiophile Voice* guest writer. Jot down a music review and send it to us. Do a feature about your favorite subject. Tell us about your latest tweaks. We'd appreciate it. No promises, but we *might* publish it. Remember, you're one of us!

The Editors



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Sound Off

Welcome to the third issue of *The Audiophile Voice*! It's hard to believe that a year has passed since the first issue burst on the scene. It was a proud occasion for all of us, full of excitement and anticipation. Most of all for Hy. At last his dream of a full-fledged audiophile publication devoted to music and equipment—with every contributor coming from within the ranks of the Society—was a reality.

Unfortunately he did not live to see a printed Issue Two, but having summoned superhuman powers to continue working to his last breath, he left us knowing that the second edition had been completed and ready for the presses.

While the Society will never be the same without Hy, we cannot continue to dwell on the void he has left. Instead we must go forward and draw on the rich heritage we inherited from him.

I believe Issue Three to be an affirmation of such resolve. You see, this issue was created by the crew that Hy and I selected after the resignations of the first issue's editor and advertising manager.

Drawing only from the Society's resources, we have Mark Block and Russ Novak as Senior Editors, Paul Lupie as the Managing Editor, with Mike Tantillo assuming the duties of the Advertising Manager. To be sure, this new team was responsible putting together and printing the second issue, but they still had the benefit of Hy's guidance.

This issue, however, is theirs and theirs alone.

What we have here is testimony that these remarkable people are ever so ably carrying on in the tradition of The Audiophile Society as founded by Hy. You are holding in your hands the product of their dedication and talent.

Arnie Balgalvis

Kiss, Kiss

Now that I've stopped the almost daily ritual of re-writing the speaker placement *magnum opus* in this issue, I can look back on it and see that I broke the cardinal rule of high-end audio (if not life itself): Keep It Simple, Stupid.

As I learned more about the subject, I kept adding to the article until it was on the verge of growing into an audiophile *War and Peace*. Don't be turned off by the nuances and the nitty-gritty, because speaker set-up is not as hard as I make it sound—and it really is important. Until the day arrives in the not-too-distant future when digital processing at the preamp stage will tame the standing wave beasts in your room, a careful set up of your speakers and chair is the best system upgrade you can possibly make. And, of course, it's free.

But if the inconceivable happens and you still have trouble with your set-up even *after* reading my article, remember that you don't have to feel left out in the cold. As Dave Gordon of Thiel reminded me, that's what good high-end dealers are for. No matter what you paid for a system, you deserve it to sound its best; and no matter what you paid, your dealer should be there to help.

The next time you're in the market for speakers, you can help yourself and your dealer by bringing in a dia-

gram of your room and discussing with the salesman your placement options. If the salesman seems uninterested, you might take your cue and find another dealer. If the salesman is willing to help, you should be willing to consider his suggestions—even if it means rearranging your room a little to accommodate the speakers you picked out.

Mark Block

Between the Ears

The front page of the Science section of the June 9, 1992 *New York Times* had a fascinating article on new discoveries in the physiology of hearing. Scientists have discovered that normally functioning ears not only pick up sounds—like tiny microphones—but also *produce* sounds—like little loudspeakers—in response to auditory stimuli. These ear-generated sounds are called otoacoustic emissions (no, that's not like a wet dream). Now here's the scary part:

> A person who fails to emit echo-like sounds from his or her ear in response to a test tone generally turns out to be deaf, or suffering from disease or the influence of certain drugs. . . . The otoacoustic response disappears when a person is taking large doses of aspirin, quinine, or psychoactive drugs. Aspirin, in fact, is known to cause temporary hearing loss. . . . People possessing "perfect pitch," the ability to sing or whistle a specified note without first hearing it on a pitch pipe or tuning fork, lose some of this ability when taking certain drugs.

If you've been taking a daily dose of aspirin for your heart, and your system's been sounding a little rolled off and lacking transparency, here's a wild guess: It's probably *not* old tubes and dirty contacts.

But wait a minute. If certain drugs impair hearing, it seems only logical that other drugs would improve it. Some aficionados of "smart drugs" claim just that. An article about smart drugs in *Rolling Stone* last year quoted a young drug-smart music lover about the effects of a certain European prescription drug; the man spoke of listening to music and for the first time hearing layers of depth and the spaces between instruments. Hmm, sounds familiar. (I was a little unclear about whether he was referring to a live event or a broadcast on a table radio.) Any doctors our there willing to write me a prescription?

For those high-end haters who think tweaky audio is a mass hallucination, I say: Maybe, in a way, it is. So what. Just because it's in your mind doesn't necessarily mean it's not real. Could it be that Julian Hirsch just has the wrong chemicals floating around in his brain?

Conclusion: The next time your system seems to be having a "bad night," maybe the problem isn't your system at all; maybe the problem is a chemical imbalance in *you*. As old Leo Tolstoy (Mr. Warren Peace himself) once said, "Everyone thinks of changing the world, but no one thinks of changing himself."

Mark Block

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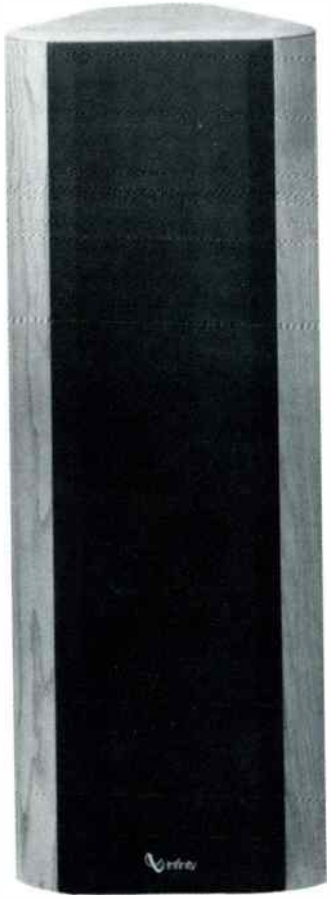

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Letters

Editor:

I was sad to learn of Hy Kachalsky's death in The Audiophile Society Meeting Bulletin. Oddly, I do not think Hy and I agreed about much of anything in audio. However, the obituary in the Bulletin struck a chord of loss. Perhaps it was just Hy as a symbol of leadership. Or perhaps the fact that Hy didn't seem old enough for us to ponder his death. When Arnie Krueger and I were guest speakers at an Audiophile Society meeting at Hy's previous house (and guests in his home, so long ago) I remember Hy telling me that it was time to go to the restaurant for dinner before that meeting. His words were so gentle that I first missed the meaning that it was I who was delaying the departure.

But, more likely, the cause of my sadness is that, with no specific reason, I had a thought in the back of my mind that I would again visit Hy and The Audiophile Society someday on my way to or from my sister's in Marblehead, Massachusetts. Whatever the cause of my feelings, do express condolences in my name and the name of SMWTMS to The Audiophile Society and the Kachalsky family.
David Carlstrom
Secretary/Treasurer SMWTMS
Berkley, MI

Editor:

The Employees of Cello, Limited join me in expressing our deep sorrow at the passing of your society's founder, Mr. Hy Kachalsky. We are greatly appreciative of his active role in the Audiophile Society. His warmth and enthusiasm as a person and his commitment to quality and integrity will be greatly missed.
Mark Levinson
Cello Ltd.
New Haven, CT

Editor:

This is a long overdue "thank you" for the wonderful *Audiophile Voice* that you sent to me, and the funny and delightful "Spring Recipe" which was included. Although I haven't yet ventured to try the recipe, I will readily admit having been bested in thinking of new and innovative ways to place *Living Presence* in the minds and hearts of music lovers. What will you think of next?

I greatly enjoyed reading the magazine. I was especially impressed by the obvious pleasure each writer seemed to feel in discussing the music or component he was reviewing. "Reviewing" isn't even a good word here—there was more a feeling of pleasant sharing of information among friends. It was interesting—congratulations to all.

I was very sorry to read in the magazine of Dr. Kachalsky's death, and was impressed by the heartfelt tributes which were expressed by the various people. I have heard that there will soon be another issue of *The Audiophile Voice*, and I am sure all the members of The Audiophile Society must feel that its continuance is an ongoing tribute to Dr. Kachalsky.

Although I haven't spoken to Sid Marks lately, I have heard that he still doesn't have a CD player. I have also heard, however, that he *sometimes* hears CDs that friends play for him. I hope that some of those are *Living Presence* CDs and that he and you enjoy them.
Wilma Cozart Fine
Philips Classics

Audio Basics: Speaker Placement

Mark Block

There's one thing most well-read audiophiles know intellectually but refuse to take to heart: The listening room determines the sound of your hi-fi more than the hi-fi itself. To put it another way, the sound of your Krell/Apogee system has less to do with the design brilliance of Dan D'Agostino and Jason Bloom than with the whims of the architect and builder of your house. If you don't believe me then you haven't moved lately.

For neophytes and rational people on a budget this may be somewhat comforting; a well set-up $1500 stereo can easily sound better than a $25,000 rig in a bad room. The aim of this article is not to get into the more exotic issues of room design and treatment, or into the arcane science of it all, but rather to deal with the most basic of questions: Given my listening room, where do I put the speakers and where do I sit? As we shall see, the answers are far from simple.

For $125,000 Dave Wilson will spend two days at your house tweaking your set up to the n^{th} degree, and just to make sure you get the best possible results he'll throw in a free pair of WAMM speakers. For somewhat less money, you could make the wise purchase of Snell speakers and have your dealer provide a very worthwhile service—computer analysis of your listening room. You can also buy a fairly extensive program to run on your own PC from Sitting Duck Software.[1] In the case of Snell, the dealer gives the Snell people your room dimensions (or the dealer can run the software himself), the numbers make their magical way through DOSland (the program, developed by Charles Nairn, is called CARA/LEO), and out pops a print-out with the suggested positions for your speakers and your listening chair. Simple. Simple?

The hard part is to actually follow the recommendations, given the decorating limitations imposed by your furniture and room design. Unlike some very dedicated (and usually single) audiophiles, I am not willing to do without certain architectural details (fireplaces, doorways and windows) simply to upgrade my sound. I got a room analysis from ASC that recommended placing Tube Traps in front of the fireplace. I can easily imagine ideal speaker positions obstructing a door or hallway. For now we'll try to deal with your room as is, and stick with methods you can employ using nothing more than a nerdy pocket calculator (or cool computer, for those beyond nerdy), a tape measure, test CDs and an ear or two.

What first got me thinking about this was an interesting question that came up at a recent Audiophile Society meeting: What music should I use to find the best position for my new speakers? Although I didn't say so at the time, my answer would be to put the music away and crank up the test tones. This is not heresy, but common sense. Music can be too distracting—you may be tempted to enjoy the music and forget about listening carefully. Even if you restrict yourself to especially "revealing" recordings,

1 Snell Acoustics, 143 Essex Street, Haverhill, MA 01830. The Sitting Duck program is called "The Listening Room," and is available from Audio Advisor for $34.95 (call 1-800-942-0220; outside the U.S., call 1-616-451-3868).

you may need to play dozens or even hundreds of CDs or LPs in order to mentally average out the colorations inherent in each.

Use your favorite records to fine tune that last 2%, but by all means position the speakers initially using a tape measure, and then start the tweaking with test CDs. *Hi-Fi News and Record Review* has released a couple of good ones, as has Chesky Records, and there's an excellent one called the ProSonus Studio Reference Disc.[2] The best, however, is the *Stereophile Test CD 2*, which has a full range of test signals specifically designed for speaker set-up.

The object here is to get the tweaking over with quickly so you can sit back and relax and stop jumping up and down to adjust the toe-in every five minutes. If, on the other hand, you're just a tweaking fool who would rather futz than listen to music, I don't want to be judgmental. Whatever gets you through the night. (But think about this: Maybe your system has never sounded right because you don't know what you're doing.)

A DUCK'S ASS

Let's make sure we're on the same page of the script by quickly reviewing the fundamentals. Correct speaker/chair placement involves optimizing two different parameters: frequency response (particularly low frequency standing waves) and imaging. The two *do not* go hand in hand; often they are at complete odds (and they *both* clash with good decorating). As the task is to find a happy compromise, this discussion must of necessity jump back and forth between the two audio objectives—just as your listening gestalt must switch back and forth as you fine tune the placement.

The key is to be organized and systematic. My system is this: 1) Do a "ballpark" placement of the speakers and listening chair using a tape measure and calculator; 2) Fine tune the imaging using pink noise; 3) Check low frequency response using test tones; 4) Find a good compromise between the two; and 5) Put on your favorite vocal music to make final adjustments (I use *Tammy Wynette's Greatest Hits*; I'm sure you have your own guilty pleasures). So let's start!

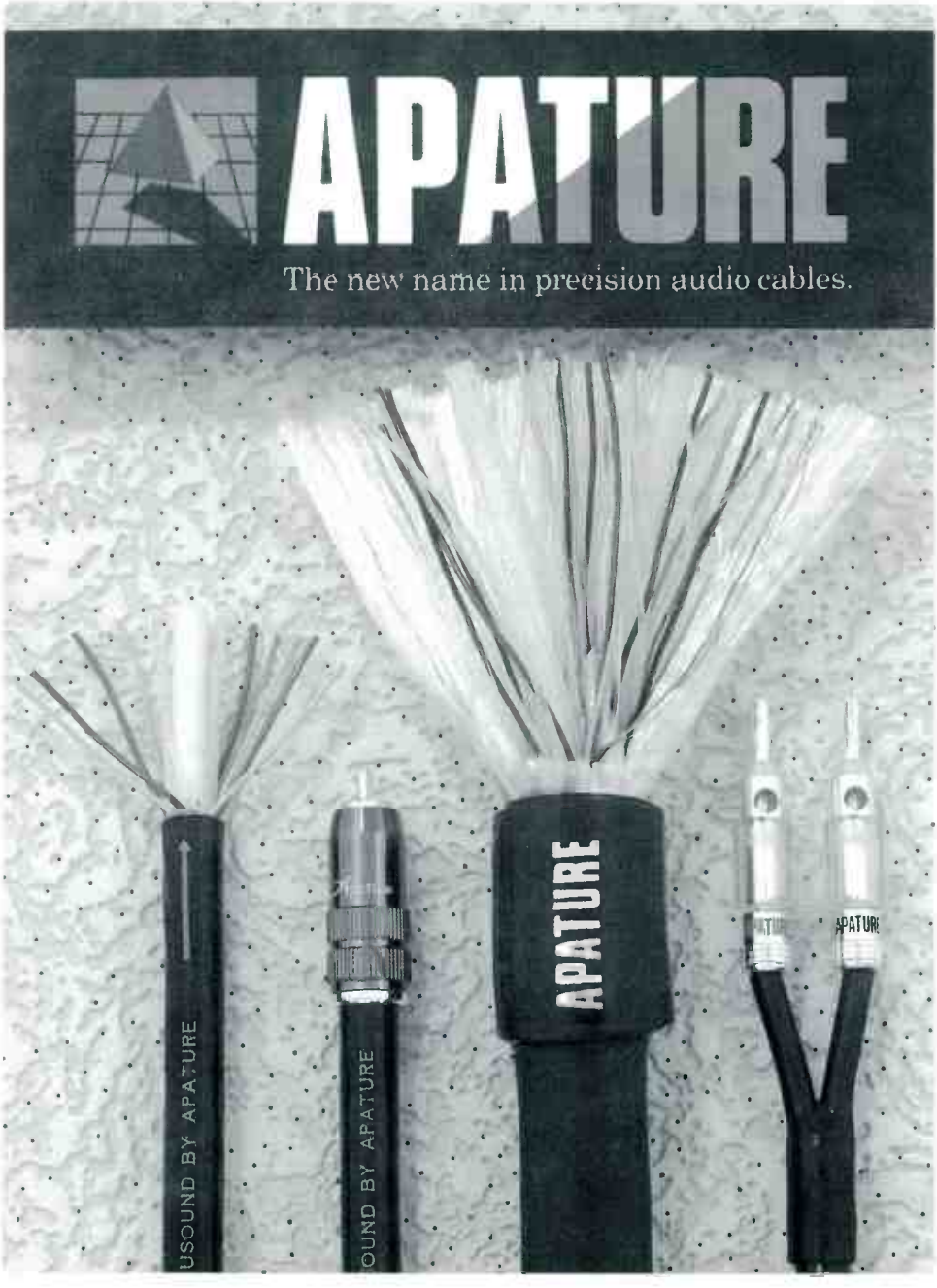
The most fundamental dimension to deal with is the distance from the speakers to the wall behind them, and already we have something of a Catch-22: In order to find the best spot for the speakers you must know where your listening chair will be, but in order to place your listening chair, you must know where the speakers will be. The immediate task is to find the spots where the speakers generate the fewest standing wave peaks and nulls within the room in general—and at the place you park your buns in particular.

Since speakers tend to provide a deeper image when positioned three to five feet out from the wall, high-end speakers are usually designed for positioning away from room boundaries. Although you'll get more bass with the cabinets right up against the wall, most audiophile systems will not have proper tonal balance with such a set-up (they'll have *too much* bass).

As you pull conventional dynamic speakers farther away from the wall, the bass reinforcement provided by the wall will diminish and response will become

2 Available form Doug Jones, Electro Acoustic Systems, 1525 Greenleaf Ave., Evanston, IL 60202 (telephone 312-328-2022).

REVIEW OF ACCUSOUND SILVER CABLES



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more irregular. Many recording studios mount the speakers flush with the wall because smooth, even bass response at a variety of monitoring positions is much more important for a sound studio than good depth reproduction. (But don't ask me why they do the final mixdown with Yamaha NS-10's stuck on the console.)

Since we audiophiles do not run recording studios, do not use professional monitor speakers in our homes, require decent soundstaging, and will accept somewhat uneven bass within the room as long as things sound well-balanced at the "hot seat," it is imperative to move the speakers out into the room. But how far? This is where your calculator or computer comes in, because the physics of standing waves are well understood (although not by me), and known mathematical rules can be easily employed.

In addition to the "three to five feet" rule for best imaging, there is the well-known "Rule of Thirds" for smoothest bass response. Although the sound studio position of flush with the wall yields the smoothest possible response, exactly one third out from the wall produces the next best result (and one fifth—the next odd numbered fraction—works well also). Maybe. Even though the physical laws are understood, there is still room for debate.

George Cardas proposes a different method for mathematically determining the best speaker location in a given room: Measure the floor to ceiling distance and multiply that by .618; this will give the wall–to–woofer distance. For the distance from the side wall, multiply the width of the room by .276. Quite obviously, these calculations are at odds with the rule of thirds *and* the rule of fifths. I frankly don't understand the theory behind them, but if you think Cardas makes great cables—and I do—then maybe it would be not unreasonable to assume that he knows whereof he speaks. In other words, give it a shot; what do you have to lose?

Tube Trap tycoon Art Noxon (Acoustic Sciences Corporation) recommends that speakers be placed either 29% or 42% off the wall. Here's his reasoning: "29% is halfway between ⅓ and ¼ points in the room. 42% is halfway between ⅓ and ½ points in the room. To locate the speaker at ½, ⅓ or ¼ points in the room will stimulate the 2nd, 3rd or 4th harmonic mode in the room. We elect to place the speaker a 'reasonable' distance away from the walls and not at fractional node points."

So confusing, all these theories; what's a mother to do? You *could* throw up your hands and let aesthetics rule. Let's look at a personal example. My room is 18 feet long; following the rule of thirds, the most intuitively promising speaker location is six feet from the wall. However, furniture-wise things work out better with the speakers closer to the wall. In that case (succumbing to decoratoritis), I'd try one fifth (3' 7") into the room. The Sitting Duck people maintain that although the Rule of Thirds works acceptably well, the "Rule of Fifths" actually does a better job in average size rooms. But now the speakers seem a little *too* close to the wall for spacious imaging, so I move them out slightly to the 29% spot. Ah, not bad.

Dave Wilson recommends taping a grid to the floor to facilitate the speaker placement process. You'll be able to accurately move each speaker a known amount without having to re-measure all the time. A rug with a geometric pattern, placed symmetrically in front of the speakers, can also provide reference points. At the very least mark your contending spots with pieces of gaffer tape (duct tape, for those ignorant of film lingo).

If you have the Sitting Duck software you can try out all these positions on your computer screen without having to physically move anything. (What will they think of next, the *Kama Sutra* on floppy disk? Virtual reality sex is is a vir-

tual certainty.) I've been using the Sitting Duck program for several months, and I love it. The results I get on the computer match very closely what my ears tell me when I adjust the speakers—even, to a great extent, with dipole panels (the directivity pattern of dipoles is not taken into account in the software's calculations). My only problem is it's a DOS program, and I'm a warm, fuzzy, user-friendly Macintosh kind of guy. So here's my friendly advice to Sitting Duck: Hey, Sitting Duck, a Mac program would blow your ass out of the water, so forget about this DOS crap and write a program for us Mac users! End of commercial.

Cut to the chase: I've positioned my speakers for smoothest low frequency response using the Sitting Duck program, and right now they are sitting six feet out from the wall. "Rule of Thirds" rules! What *you* should do is pick two likely speaker locations using the guidelines outlined above and try them both. How can you tell if one works better than the other in your room? You must *listen* to the standing waves! We'll get to that later.

PILLOW TALK

A lot of people tell me that it's particularly difficult to position dipolar panels for good bass response in a typical room, but my own experience doesn't bear that out. Remember, *all* speakers radiate low frequency sound to the rear. In practice the difference between panels and boxes is this: Panels *must* be located out from the wall for best bass, whereas with box speakers you have the option of sacrificing a deep soundstage to get more bass by placing the speakers near the wall. If imaging is one of your priorities, however, or if your speakers sound boomy against the wall—and I guarantee you they will—then panel speakers are at no particular disadvantage, and indeed have their own set of advantages.

As to setting things up on the long wall or the short one, this can get complex. Because low bass notes have a wavelength of over twenty feet, most people's rooms are going to be problematic no matter what (and the smaller the room, the bigger the problem). The conventional wisdom, though, is that since you're trying to minimize problems in the mid to upper bass (where most of the musical action is), the speakers should fire lengthwise—down the long dimension of the room—thus lowering the frequency of any standing wave difficulties.

But that's just a general rule, and all rules are made to be broken except one: Never position the woofer an equal distance from two or more room boundaries. If the width of the room is such that the speakers are most comfortably situated an equal distance from back and side walls (commonly three or four feet from each), standing wave difficulties will be greatly exacerbated. In that case, you might even want to swing the system around 90° and see what happens.

In a related vein, Jim Thiel pointed out to me that if the width of the room is an even multiple of the ceiling (for instance, an eight foot ceiling and a 16 foot width), an interaction takes place that can wreak havoc on your sound, magnifying the standing waves that exist from floor to ceiling and side to side. If you have a 14'x14' square room with a 7' ceiling, fuhggedabowdit, 'cause you're SOL (S**t Out of Luck). Find another room. In a larger square room, you might try setting up the system diagonally, thus breaking up the standing waves (them again).

Even the composition of the walls can affect your choice here. Brick walls will hold the bass in, while wood and drywall will, at some frequencies, absorb the bass or allow it pass out of the room. This is another reason why bass problems can be more severe in one direction than another.

If you decide to position the speakers a third of the way out into the room, you might want to break things up a little bit and move them off the side wall by 1/5 the width. Or Try Art Noxon's 29%. Dipoles produce very little output to the sides, so placement with regard to the side walls is fairly non-critical.

One other dimension to consider: height—and again you may find that the best frequency response and best soundstage do not coincide. Tweeters should normally be at or near ear level, although some speakers, due to crossover-related interference between tweeter and midrange or woofer, benefit from listening slightly off the vertical axis. For "bookshelf" speakers, a carefully selected stand is not an accessory but a necessity.

If you're able to adjust the height for best midrange and high frequency response, the woofer will move up and down as well, and this can affect vertical standing waves (determined by the floor to ceiling distance). The lower the ceiling, the more severe the potential suck-out at ear height (scientifically determined to be exactly 36" for an average middle-aged American audiophile sitting on an average mid-eighties period Castro Convertible). Some floor-standing speakers in low rooms simply may not work, period—as my review of the Thiel 2.2's spells out. One more thing: Don't forget "the rule without exceptions" we just talked about. In other words, make sure the woofer–to–floor distance is not the same as the distance from the woofer to the side wall.

Keep in mind that the proper height for the stand depends on the height of your listening chair. My friend David has a killer system but a low couch that requires him to sit on two pillows (not one, not three) to put his ears at the right level for his floor-standing speakers. At least he's addressed the problem; many audiophiles never bother to consider listening height. If you don't like the idea of perching your buns on a bunch of pillows, an easy trick to try is tilting the speakers backwards or forwards, which effectively changes the listening axis. Speakers and stands with adjustable spikes make this a piece of cake. Of course, audiophiles with line-source ribbons and tall electrostatic panels don't have to worry; almost any sensible height will be in-line with part of the high frequency driver.

Now that you've placed the speakers on eye-catching stands an aesthetically pleasing distance from the back wall, use your powers of persuasion to convince your mate of the decorative appeal of your set up—and by all means warn other family members about tripping over the speaker wires lying exposed on the floor. If you fail to overcome this hurdle, your commitment to audiophilia is suspect. Consider yourself lucky, stop reading this magazine, and start going to more concerts. The rest of us can now proceed to the test tones.

DON'T PUT THIS MAGAZINE ON THE COFFEE TABLE

We're going to put smooth low frequency response on the back burner for now and start cooking up some good imaging. The key ingredient in our recipe is correlated (no, not coriander) pink noise (identical in each channel), which is particularly helpful in setting up the lateral position of the speakers. An old audio buddy, Steve Guttenberg, showed me this years ago with mono noise from a tuner set between stations. Your objective is to get the speakers as wide as possible while maintaining a very tight center image at all frequencies. Forget for the moment about standing waves—we'll get back to them soon—and concentrate on producing a crisp, sharp focus.

Before you make adjustments, listen for any particular frequencies in the pink noise pulling to one side or the other. If you hear such an effect, you may have

poorly matched speakers or, more likely, a non-symmetrical room. Toe-in, a more narrow speaker placement, or a nearfield listening position will probably help, but since you probably can't unbend a bent room, you may need, God forbid, to re-think the furniture and room layout.

Some things that muck up the focus can be fixed: close and/or asymmetrical placement of the speakers *vis a vis* the side walls; a large chair near one speaker but not the other; or a coffee table between you and the loudspeakers. The "coffee table syndrome" is one of the most common audiophile image-crippling afflictions. "But do without a coffee table?" you ask incredulously. "Where will I display Madonna's *Sex* book? And how will I serve those sophisticated international instant coffee flavors like Swiss Mocha?" Sacrifices must be made; you may even discover you can live without all that stuff. The fact is, a large reflective surface in front of your listening chair will completely defocus the image of most speakers (although in my experience large line source panels are less prone to the problem than small-baffled dynamic speakers).

The degree to which furniture can affect the frequency response and focus of a system was made annoyingly clear to me when I tried to run a response check on a pair of Snell speakers that Steve and I suspected of being out of spec. Using a consumer model frequency analyzer/equalizer, we put the speakers side by side, measured each channel separately, and determined that the two speakers were indeed significantly mismatched. Then we repeated the measurements and got completely different results. Uh-oh. (Snell, forgive us for mistrusting you. We were misguided, but we're not bad people.)

It eventually became apparent that the response changed noticeably when either of us made slight movements within the room—and we were standing *behind* the measuring mic a good ten feet from the speakers. Once we stood stock still in marked positions we got consistent results (the speakers were fine), but it made me realize that any large object—table, lamp, desk, etc.—can potentially cause an asymmetry in room response.

Lucky for us our brains easily separate direct speaker sound from reflected room sound (unless the reflections are very near the drivers), otherwise the room acoustic would be a bigger pain in the back bumper than it already is. And by the way, this is also why using an equalizer to flatten mid and high frequency room response is inevitably and necessarily misguided. Think about it: Pre-distorting the signal to flatten the response contribution of reflected sound will make the direct sound—recognized as distinct and given perceptual priority by the brain—less flat, more colored.

P.S. For best imaging and tonal balance, your listening room floor absolutely must be covered with a padded carpet or a very large area rug. If the space between you and your speakers is a bare floor, then you are hopelessly insane. OK, OK, all audiophiles are hopelessly insane. I guess what I mean to say is: You haven't really heard your system; run, don't walk, to the nearest carpet store.

DO THE HOKEY POKEY

You don't need a frequency analyzer to make full use of pink noise, but you do need to perform what is known in psychiatric circles as "the audiophile dance." That is, move your head back and forth, up and down, and side to side, while listening for frequency response and imaging shifts. If you don't let anyone see you, you won't feel embarrassed about doing this little dance, and the shrinks will not have you committed. (You're not paranoid, are you?) Several different but interlocking adjust-

ment must be made: the distance between the two speakers, the toe-in, the distance to the listening chair, and its proper height.

I like to start with the speakers pointing straight ahead (no toe-in), then add the toe-in a little at a time. Move the speakers closer together, then farther apart. Try to get a feel for the pink noise, and how speaker adjustments affect the tightness of the image. Each time you make a change, do "the dance" to check the sound at different listening positions.

As you move your head around, particularly forwards and backwards, you'll notice that the pink noise will take on different tonal characteristics. On my electrostatics I hear it what sounds like a jet taking off as I move my head back, and in some areas of the room the timbre changes from soft and rolled off to hard and metallic. Obviously the idea is to find a listening spot where the pink noise is both uncolored and focused.

My feeling is that if the speakers and your listening chair form an equilateral triangle, then that's as close to the speakers as you'll ever want to be. If not, buy some headphones and stop trying to turn your expensive speakers into something they're not. Snell has a specific recommendation for best imaging: The distance the listening chair should be moved back from the speakers can be computed by multiplying 1.33 times the distance between the woofers (measured from the center of each cone). In other words, imagine a line drawn on the floor between the speakers; if the speakers are 7' apart, then your chair should be 9' 4" (7 x 1.33) back from that line.

If you marked two competing speaker positions based on the recommendations for smoothest low frequency response, now's the time to check out the imaging of pink noise with both positions. If one or the other has noticeably tighter focus, then you've just found your speaker location. If neither images well, you might want to get out the tape measure and check that speaker placement is absolutely symmetrical to a fraction of an inch, particularly with respect to the back wall. If you can get each speaker the same distance from the nearest side wall, great, but we all know that doorways and furniture layout often prevent this ideal. Off-center or unfocused imaging is sometimes the outcome.

Getting back to placement of the listening chair, my experience tends to support the Snell recommendation, as I always seem to end up with my chair just slightly farther away than the equilateral ideal. But don't go too far! The more distance you put between yourself and your loudspeakers, the more dominant the room reflections become. Depending on the directivity pattern of your speakers, this may either mask or accentuate the frequency response irregularities inherent in the design. It's almost impossible, however, for room colorations to "balance out" speaker colorations. Narrow dispersion panels have almost no high frequency output to the sides and therefore are not so prone to room problems, while multi-driver dynamic speakers can give you fits.

Rest assured that depth and specificity of image—the stuff you paid so much money for when you upgraded to that megabuck component last year—will quickly go to hell as you move your chair farther back from the speakers. Audiophiles who like to sit far removed from the speakers are probably the same ones who say there's no such thing as "imaging" at orchestral concerts. I sit in row F at Carnegie, and I say Bullshit. If your speakers don't sound good near-field, if they only begin to "gel" at a distance, then they're probably intended to work only in super large rooms—Grand Central Station maybe. Or they're just bad speakers.

Three and four way speaker systems, particularly those with low-order cross-

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over slopes, will probably "need their space" before they'll be at their best. Mini-monitors and full range panels should sound fine up close, and great advantages will be reaped by finding a good nearfield listening position.

Be careful with the toe-in adjustment, because pink noise can potentially lead you in the wrong direction. You may have the urge to use a little extra toe-in to get the focus tighter, but resist it. In my system I've noticed that too much toe-in results in a lack of depth and spaciousness, a soundstage that is unnaturally narrow, and a stuck-to-the-grille feeling with instruments that were recorded (or, more accurately, *panned*) hard left or right.

Speakers with wide dispersion dome tweeters create an interesting paradox for the dedicated tweaker. On the one hand, the wide dispersion means that the listener can spread the units out wide and still hear an extended treble even without any toe-in. That dispersion, however, will also create image-damaging reflections off side walls, which can only be reduced by *more* toe-in or close together placement. Short of sound absorption on the walls, a little experimentation is the most I can suggest. *[Unfortunately, without sound absorption on the walls there is no good way of getting around this problem, in my experience. There are decorative alternatives that do the job acoustically.—Tech Editor]*

Try the tape measure again to make certain that the toe-in is perfectly symmetrical. Using a little practical geometry, my trick is to stretch the tape straight out exactly along the bottom edge of the front of one speaker (or the stand's frame) until it reaches the other; make a mental note of where the end of the tape made contact, and repeat the process with the second speaker. Adjust the toe-in so that the tape intersects each speaker at the same point. This insures that the speakers are toed-in identically relative to each other. Double check your work visually from your listening chair, siting along the inner edge of each speaker cabinet. If your eyes disagree with the tape measure, the problem is probably that your chair is off center. Double check this and don't give up until it's right.

Each speaker system and room will be different, but my suggestion is that you use the least amount of toe-in necessary to produce a focused image with pink noise, then do the final adjustments with a few good vocal recordings. I'll be pilloried for saying this (ooh, and I'll love every minute of it) but *don't* use classical; use jazz or rock recordings with a centered vocal. The imaging of classical recordings is too dependent on microphone technique. Spaced omnis, Blumlein, ORTF, Decca tree, close up multi-mikes—you can't possibly know how each record is really supposed to image, so you end up fine tuning your system to compensate for the unavoidable miking compromises of your favorite recording.

Several times I've visited the homes of audiophiles who listen exclusively to classical music, and I'm often shocked at how poorly their systems image. They never play rock and roll with vocals and pan-potted instruments, so they don't realize their systems aren't focusing properly. Although studio recordings with artificially created (pan-potted) imaging make good tests for image specificity, they may not have much depth, so be sure to try a Bob Katz-recorded Chesky CD or two, particularly one with a vocal—like John Pizzarrelli, or Ana Caram (Sara K., however, was recorded slightly off center). If you can't get the Chesky stuff to image well, you've got a real problem.

Bob visited my old apartment in New York about six years ago (before Chesky started doing their own recordings) and criticized my system for being, among other things, not well focused. I took the criticism well: "Bob, you're frigging

nuts! The focus is razor sharp." The moral is that we all have our standards; Bob's are obviously higher than mine. That's why he's making recordings and I'm just writing about them. (P.S. He was right; my large glass coffee table was partially to blame.)

BACK TO SQUARE ONE

Now that you've optimized the system for best imaging, we're going have to temporarily throw it out of whack. We haven't fine-tuned the front-to-back dimension of your speakers or listening chair (finally, back to the standing waves), and for this we need to bring out the big guns—low frequency tones. I recommend the *Stereophile Test CD 2*, which has an excellent range of tones specifically designed for mid and low frequency speaker diagnostics. Move around the room as you listen to each tone, and don't forget to do a little bobbing up and down—strut your funky stuff but don't let anyone see you doing it. You can't possibly explain this to your spouse or kids.

You'll notice spots where the bass becomes unbearable, and other places where it disappears like magic. This weirdness is caused by (yes) standing waves—the evil spirits of audio, unseen but sinister in character—and the idea is to position the speakers and your listening chair to avoid these little devils. Unfortunately, in most rooms it can't be done. The aim is to settle on an acceptable "lesser evil" compromise, avoiding the major response peaks and dips.

The infuriating thing is that by moving your listening chair away from a null at 60 Hz, for example, you'll probably be moving it into a null at 50. My experience in average size rooms is that you can change the frequency of the null at your chair, but you can't avoid the fact that there will be a null of some sort there. My further experience is that moving your chair will make a much bigger difference than moving your speakers. If you followed my advice and used the rule of thirds to position the speakers in the first place, they're probably in a good spot relative to the back wall—but do play around with an alternate position.

The test tones will at least help make glaring positioning errors obvious. For instance, you don't want to plop the Barc-O-Lounger down smack dab in the middle of a 60 Hz reinforcement, no matter how good it makes your wimpy Deutche Gramophones sound. You'll probably notice that some low frequencies will be doubled up at the wall opposite the speakers, and sucked out somewhere in the middle of the room. My free advice (realize that sometimes you get what you pay for) is to move your chair out from the wall but away from nulls that are too high in frequency. A 40 Hz suck out is a lot less deleterious than one at 80. Of course, a 40 Hz *reinforcement* with a speaker that rolls off below 50 should be considered a godsend.

By the way, think about locating your electronics and, more importantly, your turntable in a low frequency null near a side wall. Some audiophiles spend hundreds or thousands of dollars on isolating their gear from low frequency feedback, when moving the equipment into a null would solve most of the problem for free. A tip for dipole owners: position your turntable directly to the side of one speaker (a guaranteed null point).

If you have a frequency analyzer or a Radio Shack sound level meter, you can precisely track not only the presence of standing waves but also their severity. Because most rooms have some inherent asymmetry, if the frequency analysis is performed on one channel at a time you'll get a clearer picture of the room's standing wave predicaments.

You may discover you have the option of putting your chair in a mild null at 60 Hz, or moving it a bit and getting a se-

vere one at 40. The choice is a tough one; you'll want to play your favorite discs to get a handle on the musical consequences. Don Maston, designer the of Maston Audio loudspeakers, recommends that the listening chair be positioned exactly 45% from the wall behind it, but in many rooms that would put you uncomfortably close to the speakers. Give the Cardas formula a shot (.618 x ceiling height).

Art Noxon has a recommendation using his above mentioned 29% and 42% figures: Depending on whether you prefer a nearfield or a farfield listening position, place the "hot seat" at a distance from the speakers of either 42% or 29% of the room length. His "textbook" room example is 23.9 feet long by 19 feet wide, so a ten foot speaker-to-listener distance would equal 42% of the room length. In that room, by the way, the speakers should also be spaced 8 feet apart from one another (42% of 19).

Just remember, you can't avoid standing waves, but by staying away from even multiples of the room dimension you *can* find spots where they're less calamitous. If you find that the best spot for standing waves is at the position indicated by our just completed imaging experiments, then nail, glue or otherwise permanently imbed your chair at that position, and consider yourself truly blessed. The odds of this happening are roughly the same as Dan Quayle spelling *eigenton* correctly (no *e* on the end).

By the way, if you discover a lateral bass null running through your listening chair, my sympathies. Definitely relocate the speakers so that they fire in a different direction. I found this situation when I tried to use a mono subwoofer in the corner; I had excess bass all over the room except in the middle where my chair was. A subwoofer/satellite system with *two* subwoofers, however, is a wonderful thing. The woofers can be placed asymmetrically without mucking up the imaging; each will then excite different room nodes, producing an overall smooth response.

Vertical nulls caused by the floor-to-ceiling distance are very difficult to deal with. Many audiophiles like myself have located the hi-fi in the basement because we lost the great decorating debate mentioned earlier in this article. I have traded marital harmony for truly intractable standing waves caused by my basement's seven foot ceilings. Surprisingly, among the few speakers that work acceptably are large, line-source panels; since the low frequencies emanate from all over the panel, there's no single woofer-to-ceiling distance to cause a standing wave. The lack of vertical dispersion also means freedom from reflections off the low ceiling.

Playing around with the Sitting Duck program, I noticed that a woofer-to-floor distance of 16–18 inches seemed to produce halfway decent bass even with my low ceiling, but a couple of inches in either direction looked predictably disastrous. I had the opportunity to test this by placing a pair of Spectrum loudspeakers on the floor (they are designed to sit on stands); the center of the woofer to the floor measured exactly 16 inches. The result: outstanding bass. Chalk one up for the Sitting Duck programmers.

The cement floors and cinder block walls of typical basements hold all the bass in and make a happy breeding ground for standing waves as well as water bugs. Concrete basements, unless very large, are an awful place to try to make a hi-fi work well. Although this is at odds with the conventional wisdom, I think floppy wood floors and thin walls make for much more uniform bass response. Wood floors will, however, resonate like a drum at some frequencies, so there are trade-offs here too.

CALLING DR. HELMHOLTZ

But enough of my problems, let's talk about you. How do you like my system?

Just kidding. Inevitably the best speaker/chair positions for standing waves are not the best ones for imaging. (The laws of physics were demanding enough to deal with as students in high school and college; why must they intrude on our pleasures as adults?) In any case, you'll probably have to go back and forth between pink noise and low frequency test tones several times before you reach a satisfactory compromise, but it's not as much of a drag as it sounds—if, as mentioned earlier, you remember to mark the contending "hot spots" with tape on the floor.

Once you put the test disc away and start listening to music, feel free to nudge things a little, but don't get crazy. Relax. Sit back for a few days or weeks and see if you're enjoying the music. If after all this work if you're still unhappy with the sound of your system, it's time to talk to your dealer about room treatment: RoomTunes, RPG diffusers, Sonex, Tube Traps, even Helmholtz resonators. Or better yet, you can move.

P.S. A couple of audiophile friends came over several months ago and wanted to move my speakers. After carefully explaining to these nitwits that rigorous thought and brilliant insights went into the existing placement, I got only unreasoned complaints in return. My buddies were clearly several corks past sober, but to humor them I rolled my eyes and moved the speakers. Hmmmmn, not bad. Sounded like different speakers. Why buy new speakers when all I have to do is reposition them?

P.P.S. My wife now hates the layout of the room. This is why decorators and audiophiles will never mix; good aesthetics and best sonics never go hand in hand in real rooms. I told her if she didn't like it she could decorate the basement to her heart's content and I could move the hi-fi up to the living room. She did not take me up on it.

Super Bit Mapping and High Definition CD

Shannon Dickson

Several articles in this issue examine some of the real advances being achieved in digital playback components. It is true that the better examples of these new playback devices can achieve a performance level equivalent, in many respects, to all but the best analog offerings.

Unfortunately, one arrives at that conclusion only after listening to the relatively small number of CDs that have been recorded and mastered with special T.L.C. Indeed, without commensurate improvement in A to D converters and the rest of the encoding chain, the dream of digital music equaling the finest in analog will remain just that.

Considering this state of affairs, I was very pleased to learn recently of two exciting new developments in digital encoding. First, we will look at a re-dithering technique that enhances the resolution of compact disc. It's called Super Bit Mapping (SBM), and was developed by the Sony Corporation. Then we will preview a new process called High Definition Compatible Digital™ (HDCD™)—potentially a major breakthrough in digital sound!

SUPER BIT MAPPING

All CDs produced to date have a maximum resolution of 16 bits encoded on the disc. *[That's a matter of specification, not choice.—Tech Editor]* In recent years, the continuing development of analog to digital converters has resulted in 20-bit recording systems. In fact, *Sony has been creating 20-bit master tapes for most of their classical releases since 1990.*

The sonic advantages of 20-bit recordings versus 16-bit are dramatic and include a 16-fold increase in resolution and a 24 dB increase in dynamic range. Unfortunately, in spite of most improvements in 16-bit precision on CDs made from 20-bit masters, most of the sonic benefit does not survive the transfer process.

The problem arises because of the limitations imposed by the 16-bit format. During the transfer of the 20-bit signal to 16-bits for encoding on the CD, the four extra, or "least significant," bits are either rolled off, truncated or re-dithered. The standard process of getting rid of these 4 extra bits inevitably creates unwanted low level quantization noise or impairment to the overall signal-to-noise ratio.

Several companies have worked hard to ameliorate the effects of quantization noise. Harmonia Mundi developed a system called Advanced Noise shaping (ANS) which has been part of the recipe for their excellent releases of late. Lexicon's process, known as PONS (psychoacoustically optimized noise shaping), is another example. PONS is found in their new 20/20 A/D converter.

Sony's answer to this problem, Super Bit Mapping, is a creative noise-shaping algorithm that takes advantage of psychoacoustic principles when re-dithering the 20-bit master tape down to the 16-bit CD format. It is important to understand that with SBM, linear 20-bits are *not* being encoded on the CD. While that would be preferable from a sonic standpoint, it would also entail redesigning the basic format, rendering all existing players and software at least partially obsolete. Sony has chosen a more practical solution, as Super Bit CDs can be played on any CD player.

The Super Bit Mapping algorithm is implemented through a special processor prior to the actual encoding in the production chain. Unlike more familiar forms of noise shaping, such as one-bit conversion schemes that shift the unwanted noise far outside the audible frequency spectrum, SBM redistributes the noise within the audible bandwidth. The human ear is most sensitive to low-level quantization, or white noise, at between 3 kHz and 5 kHz. The SBM process reduces the noise level in this narrow band to below audibility and redistributes it on either side of the 3 to 5 kHz spectrum, where it remains inaudible, in spite of increased level, because of the ear's reduced sensitivity in those regions.

The advantage of reshaping this noise within the audible spectrum is that there is no reduction in total noise power and dynamic range! A spectral analysis, published by Sony, comparing a 20-bit master to a traditional 16-bit truncated version and with a 16-bit Super Bit Mapped signal shows a significant improvement in low-level linearity, as well as a resolution and dynamic range close to that of the 20-bit master.

Interestingly, Sony has just recently announced the Super Bit technology. The first releases to formally carry the Super Bit Mapping logo include the entire Glenn Gould catalog reissue from Sony classical. This series will be released over a two-year period and include over 100 CDs.

Sony's Legacy division will also begin an SBM reissue campaign of classic jazz and pop recordings from the Columbia/Epic vaults. These reissues, titled the "MasterSound" series, will be fin-

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ished in 24-karat gold and include a deluxe box and all liner notes commensurate with a limited edition. By the way, the Legacy CDs will all be remastered using the best available master tape of each work. Even if Super Bit Mapping was a "red herring," which it isn't, it would be a welcome excuse to remaster many of these classic works, which were inadvertently butchered during the early years of digital.

Sony's decision to announce SBM technology with the first Legacy and Glenn Gould reissues may have something to do with the eminent release of the MD and DCC digital formats and their desire to clearly distinguish CDs superior sound quality. In fact, just about *every* Sony Classical CD released during the past year also used Super Bit Mapping. Sony is now on their third iteration of the Super Bit algorithm!

Ever since I bought Sony's release of Schubert's Quintet in C, Rondo in A (SK-46669), I've found myself heading for the Sony bin at Tower Records on each visit to check out and often purchase new releases. This CD and many others, including the Royal Edition releases of Leonard Bernstein's work, incorporate Super Bit Mapping.

Although SBM is partly responsible for the good sounds coming from Sony Classical these days, it is hardly the entire reason. According to David Smith, Sony's director of operations for North America, they have worked very hard to develop the finest recording and mastering facilities possible. I was impressed by Mr. Smith's "high-end" sensibilities, what with the use of such gear as all-Cello electronics and cables, Wilson Watt/Puppies, components from Studer and custom A to D converters from the same company that designed the devices used by Wilma Cozart for the recent Mercury Living Presence reissues.

Mr. Smith candidly acknowledged their awareness of "the skeletons in the closet" from the original implementation of digital. However, he also pointed out that the inherent potential of the format should reach fruition in the near future as they work out the known anomalies in the system in order to satisfy even the most discriminating listener. It is refreshing and encouraging to see such an attitude from a company of Sony's stature. They are currently working on four major research projects concerning A to D conversion, noise reduction and better microphones.

Sony Classical recently sent me several of the new Glenn Gould CDs, and Legacy delivered a sampler containing five cuts from their first releases, including Miles Davis' "All Blues," Boston's "Hitch a Ride," and Billy Joel's "Honesty," among others. Listening to the Glenn Gould discs as well as other Super Bit CDs I already own, I was impressed by the natural timbre and richness of the music. Dynamic contrast on these discs is increased relative to many other CDs I've heard. This enhancement adds to the sense of presence in your listening room.

A/B comparison of Miles Davis' "All Blues" on the original 16-bit Columbia CD (*Kind Of Blue*) with the new Super Bit version from Legacy is revealing. Again, the greater sense of richness and presence is evident. In addition, I noticed increased resolution of inner detail and ambiance with the Legacy cut.

Check out Billy Joel's "Honesty." This is from his *52nd Street* recording, which was the first CD ever released—and it sounded like it. The Legacy version of "Honesty" is a real relief, with added body and texture to the vocals.

I have no idea how much of the improvement I'm hearing on the Legacy and Sony Classical CDs is due to Super Bit Mapping and how much is due to the extra care used in the rest of the recording, mastering and encoding chain. We will have to wait for a direct com-

parison with Super Bit Mapping as the only variable to appreciate its relative merit. However, whether SBM's contribution to the better sound coming from Sony's Legacy and Classical divisions is a little or a lot, it is good news that they are so actively pursuing improved quality in compact disc performance.

HDCD

I had planned to end the article at this oint. However, I was just informed about a new encoding/decoding process announced at the time of the October AES Convention in San Francisco. Called "High Definition Compatible Digital," or HDCD, this system springs from the fertile minds of Keith O. Johnson of Reference Recordings and Spectral fame, and Michael Pflaumer, who also created the highly regarded TOPS computer networking system.

According to Michael Ritter, president of Pacific Microsonics, the company deloping the design, the HDCD process is the result of a five-year effort by Mr. Johnson and colleagues to develop a digital recording and playback system equivalent to the fidelity of analog recordings yet fundamentally compatible with the existing CD format and players.

The majority of the intelligence of the DCD process has been incorporated in the encoder using high-speed Digital Signal Processing, which should help reduce the cost of the HDCD decoding circuitry. Another important feature of the system, according to Mr. Ritter, is that there is a very significant improvement in the sound quality of HDCD-encoded discs played through a standard CD player or transport-combo.

However, to fully realize the ultimate potential of HDCD, these discs will have to be reproduced on players incorporating HDCD decoding circuitry. Mr. Ritter also stated that regular CDs played through a system containing an HDCD decoding circuit will sound better, though the improvement is nowhere near the level achieved by playing an HDCD-encoded disc through a standard player or processor.

Pacific Microsonics plans to build the encoders and market them to mastering labs directly, but will license the non-exclusive use of the HDCD decoding circuit to companies making CD players and processors. In addition, they plan to incorporate the decoder circuitry onto a low-cost IC chip that can be used in mass-produced consumer products.

I understand that several big name high-end digital manufacturers are interested in licensing the decoding technology. It should take about a year for the encoding and decoding processors to be generally available, although the prototype encoder will be used on a number of projects offering special artistic and commercial potential during the coming year. For instance, by the time you read this Reference Recordings will have released their first two CDs combining HDCD with first-class production techniques.

Apparently, the process works as a result of having identified previously unknown or misunderstood sources of digital distortion, both additive and subtractive. The additive distortions are then canceled by the HDCD system, while the subtractive distortions resulting from the insufficient data present in the 44.1 kHz sampling rate are corrected by providing additional data, all the while remaining transparent to the standard digital signal.

According to Pacific Microsonics, the result of using the complete HDCD encoding and decoding system is a level of "resolution and a freedom from distortion at least equal to the finest analog master tapes." (!!!) Lofty claims indeed, but considering Keith Johnson's involvement, not to mention the glowing first-hand reports I've heard from several of the most respected and seasoned listen-

ers in the business, I'm cautiously optimistic. It is, at the very least, of great interest to all music lovers. If HDCD lives up to its promise, it's *definitely Party Time*!

Just remember when making your own evaluation, that although listening to a HDCD disc through a standard player is claimed to set a new standard in digital sound quality, achieving an analog master tape level of performance will require the HDCD decoder as well. Look for decoder upgrades from processor manufacturers containing the HDCD circuitry.

The first recordings using HDCD from Reference Recordings are *Testament* (a collection of American choral music for male voices) with the 180-voice Turtle Creek Choral, *Dick Hyman Plays Duke Ellington* (the world's second direct-to-CD recording), *Trittico* with Fredrick Fennell and the Dallas Wind Symphony, and *The Oxnard Sessions, Volume II* by Mike Garson and his trio.

High Definition Compatible Digital is truly exciting stuff! It remains to be seen whether or not this excitement stands up to the scrutiny and evaluation the process is certain to undergo. We will be following this evolving story very closely and hope to bring you a hands-on evaluation of the system very soon.

POSTSCRIPT

Shortly after completing the above preview of High Definition Compatible Digital, Tam Henderson and Jan Mancuso of Reference Recordings were kind enough to send me a copy of the first HDCD encoded disc, hot off the press, called *Testament* (RR-49).

This work is a beautiful collection of American choral music sung by the 180 male voice Turtle Creek Chorale with the Dallas Wind Symphony in the acoustically excellent Meyerson Symphony Center in Dallas. Among the selections are Howard Hanson's "Song of Democracy," Copland's "The Promise of Living" and "Simple Gifts," and Bernstein's "Make Our Garden Grow," as well as works by Ron Nelson and Randall Thompson.

I haven't listened to a lot of choral music in the past so I'll defer analysis of the artistic content and style to more qualified music reviewers. I will say that I thoroughly enjoy the music on this disc.

From a sonic standpoint, this CD is remarkable. The most dominant impression after the first few plays was a great sense of relaxation and ease imparted to the music. The perspective is *very* open and spacious. I was amazed by the resolution of the acoustic space of Meyerson Center. The clean, controlled reverberant decay clearly defined the rear and side walls of the concert hall.

Even more significant is the very natural portrayal of timbre and excellent dynamic range on this recording. The quality of the brass instrument's bite is definitely more realistic than on other CDs, and the slam of the timpani drum could modulate a pacemaker! Correct timbre and realistic dynamic contrast add *so* much to the quality of a recording, and their lack has been the Achilles heel of many CDs.

I wish I could tell you how much of the wonderful sonics on *Testament* is due to the HDCD encoding, but without a direct comparison I simply can't. I *can* tell you that on this disc I heard virtually no low level grain; the notes just decay in a clean, natural fashion into the spacious acoustic. It was very easy to forget I was listening to a digital source even when playing this disc through a standard decoder.

According to Keith Johnson, the qualities I've described represent a little more than half of the potential of the entire HDCD system. He noted that in hearing this and other HDCD encoded discs

through a processor using HDCD decoding, a threshold is crossed in resolution of timbre and enhancement of presence that sets a new standard in home playback.

Incidentally, most of the HDCD decoding circuitry can be implemented through an algorithm on an EPROM chip in a DSP filtered processor. Software-based decoders could therefore be upgraded cheaply and easily. If the properly decoded sound of HDCD CDs is a significant improvement over the already excellent results achieved listening to *Testament* through a conventional decoder, then the demand for HDCD based processors is going to be fast and furious!

In Search of the Missing Link

Shannon Dickson

Until recently, most conversations concerning the important features of digital processors or CD players would inevitably revolve around the DAC chips and type of oversampling digital filter employed in a given unit. There is no question that manufacturers must use great care in the selection of these components during the design of a digital converter. However, the latest generation of processors clearly demonstrates that it is how the digital signal upstream and the analog signal downstream from the digital filter and DACs is handled (as well as the design and implementation of the power supply) that has the greatest impact on whether a system will test well but merely sound OK, or test well and blow you away.

Now that it is taken for granted, with a few exceptions, that the path to high-end digital sound includes a separate transport and an outboard processor, the interface between the two has been found to be critically important. The basic problem in converting analog music to digital data and back to an accurate, musically satisfying analog waveform is that the system must not only quantify and recreate the exact changes in amplitude of the original signal (the domain of 1's and 0's), but it must do so with vanishingly small variation in timing accuracy (jitter).

Any careful study of digital audio will leave you amazed that the system works at all. *[The same can be said of vinyl records—ED.]* In fact, the designers have done a remarkable job in creating sophisticated error correction and decoding circuitry, with the result that digital components really do, for the most part, get the 1's and 0's right. In spite of this success, it wasn't until recently that the majority of playback systems gave a thin, hard, defocused edge to the upper frequencies of music that made it difficult to relax and really get into it.[3]

The prime culprits robbing digital music of its emotional content are these subtle timing errors. The causes of jitter are many, and of both mechanical and elec-

3 A good introduction to the subject is the book *The Compact Disc: A Handbook of Theory and Uses*, by Ken Pohlmann, 1989, A-R Editions, Inc., Madison, Wisconsin. Phone 608 836-9000.

trical origin. The key point to keep in mind when evaluating the various practical solutions employed by manufacturers to deal with both random and periodic jitter is that their harmful effects are cumulative. Describing each area of the digital chain in which jitter can be introduced is beyond the scope of this article. Instead, just remember that for true 16 bit resolution, time-based errors in the disc to DAC signal path will affect the quality of the final sound if the cumulative error in resolution is greater than 50 to 100 picoseconds . . . as in trillionths of a second!

The higher the system resolution, the more critical it becomes to achieve very low jitter. For instance, true 20 bit resolution would result in a noise floor some 24 dB lower than a perfect 16 bit system. This means even more subtle unwanted artifacts will be revealed that require even more sophisticated jitter attenuation techniques!

A few top transports today claim bitstream output figures as low as 20 picoseconds. As impressive as these figures are, the best possible performance from compact disc allows for only 30 to 80 trillionths of a second of additional timing error to occur as the signal passes through the transmission cable and connectors, the processor's input receiver, logic circuitry, digital filters, and DACs. Because there are few opportunities to make corrections to the signal after the error correction and the clock in the transport, the challenge lies in minimizing any additional jitter in the rest of the digital chain.

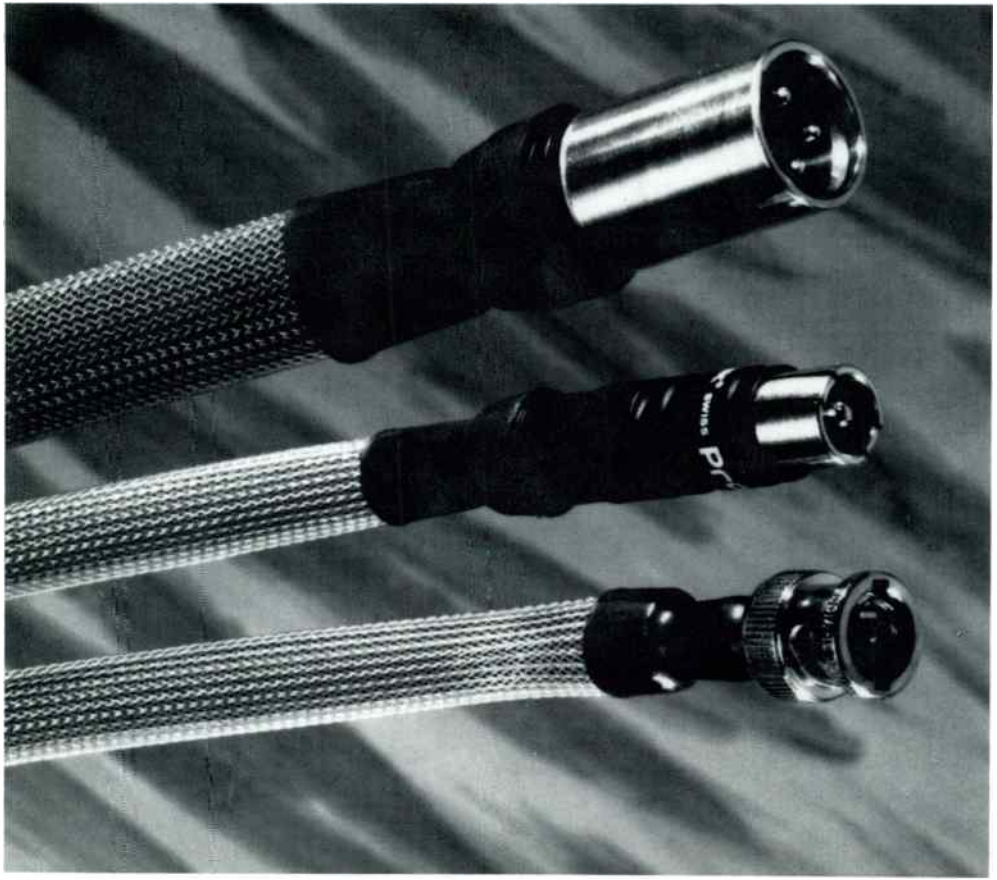
Before we go on, I'd like to discuss a crucial concept necessary for a proper understanding of the digital interface. It is important to realize that the task of a digital circuit or network is to transmit the bits without error and with sufficiently low jitter. Consequently, there is no inherent sonic characteristic to a particular interface scheme or type of digital cable.

Any system, be it electrical, fiber optic or what have you, will have an identical impact upon the music if it presents the same 1's and 0's with timing irregularities of the same nature and amount. When you hear someone say that a particular cable or format is superior to another, it just means that at this point that particular cable, used with those interface components, gets the bits right with a lower level of audible jitter. It does not mean that there is an absolute advantage to, for instance, fiber optic versus electrical, or one conductor material versus another.

Remember, we are not "hearing" the digital sound through an interface in the same manner that we hear an analog signal through our audio cables. Even so, as we will see, your choice for a digital link will have a tremendous effect on the quality of sound.

We will now look at the transmission circuitry (usually a dedicated chip), the digital cable (with connectors) between the transport and processor, and the input receiver of the processor.

The designers of the compact disc system developed several standard formats for handling the bitstream connection. The professional format is called AES/EBU (Audio Engineering Society/European Broadcasting Union) and is a 110 ohm, 5 volt, balanced circuit using XLR connectors. The commercial standard, known as S/PDIF (Sony/Phillips Digital Interface), is a single-ended 0.5 volt subset of the AES/EBU and uses either RCAs or BNC connectors and coaxial electrical cables. The fiber optic version of S/PDIF uses S.T. connectors and glass fiber optics on better units. The EIAJ optical standard, commonly referred to as TosLink for its Toshiba origins, uses plastic fiber optic cables for the most part. With a bandwidth of only about 4 MHz, it is not really capable of high-end performance unless extensive jitter attenuation circuitry is used in the processor.



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The mention of TosLink and jitter attenuation brings up an important point: At least two basic design approaches have developed with respect to improving the performance of the digital interface. The vast majority of manufacturers are attacking the problem through sophisticated modifications of the conventional input receiver. This more common approach derives all internal timing for the processor by locking onto data blocks within the incoming bitstream. Any jitter created upstream will be passed on to the input receiver along with the data. The bulk of this article deals with various attempts to reduce the jitter level commonly experienced with this method of clock recovery.

The other basic design concept for clock recovery was developed by Ed Meitner of Museatex. Ed has created a novel input receiver that establishes timing reference for the processor by locking onto the preamble frames that precede and follow each data block in the bitstream. The preamble frames occur at much lower rates than individual data blocks, allowing short term random timing errors to be averaged out—resulting in a far more stable recovered clock.

This new input receiver design, coupled with the Museatex C-Lock jitter reduction circuit, is claimed to minimize the audible differences between transports and cables. Even TosLink interfaces are said to work well with this system. We hope to bring you more information on the Museatex approach in a future issue.

As mentioned earlier, the reason the digital interface is so important is that music requires extremely precise timing as well as quantitative accuracy. Complicating this task is the fact that the format embeds all the audio and subcode information within the clock signal and sends it along a single cable instead of using a separate cable to synchronize the timing clock. This design aspect, although cost effective compared to other schemes, has some tradeoffs and demands highly accurate transmission components.

In order to minimize these timing irregularities through the digital interface, engineers attempt to optimize three basic parameters: bandwidth, characteristic impedance, and transitional impedance. First and foremost is bandwidth; the greater the bandwidth of a digital signal, the more information it can carry with fewer errors in the bit rate.

In digital, the ideal is a perfect square wave. In other words the transition between "on" and "off" would be instantaneous with 0 risetime! Since this rate is impractical, the debate over the past two years has attempted to define just what bandwidth requirements are necessary to achieve true 16 bit (or better) performance with low enough jitter as to have no audible effect.

Previously, I mentioned that developers of "state-of-the-art" digital are attempting to achieve total system jitter figures under 100 picoseconds. Mike Wesley at Madrigal and others feel that in order to reach this level of performance, a bandwidth across the digital interface must be greater than 300 MHz!

Most S/PDIF electrical transmitters and receivers to date have had limits of 25 to 100 MHz and, until recently, had output clock jitter levels in the nanosecond rather than picosecond range. The S.T. glass fiber optic (AT&T system) runs usually about 56 MHz in bandwidth, though it has the major advantage of electrical isolation between transport and processor. Even though the digital audio data stream operates at only 3.1 MHz, the additional harmonics necessary to achieve a square wave with minimal ringing demand a much higher bandwidth. While proponents of a 300+ MHz bandwidth present a convincing argument, other designers claim equivalent results could be achieved at lower bandwidth by using more sophis-

ticated jitter correction circuitry with the input receiver.

The other two fundamental criteria for the digital link—characteristic impedance and transitional impedance—deal with the physical requirements for transmitting the signal with maximum stability. Characteristic impedance is simply the impedance throughout a given length of cable or circuit. Remember that for S/PDIF it must be 75 ohms, and variations of as little as 2% to 4% can generate standing wave reflections in the line.

Transitional (or termination) impedance describes the amount of variation in impedance at each transition point. For instance, at each solder joint, RCA jack, etc., there will be some abrupt impedance change which, if great enough, will produce signal impairing reflections not unlike the way a large rock will cause a greater disturbance than a small one when dropped onto a smooth lake. These reflections add additional noise to the data stream as they move up and down the cable or circuit. This noise, in turn, will result in even greater timing errors at the input receiver.

Now that manufacturers have a fairly clear understanding of the basic problem areas of the digital interface, you would expect that standardized solutions would be available in current offerings of outboard components. Unfortunately, at present no real consensus has been reached.

In spite of significant advances seen in several new input receivers, re-clocking circuits, and cable designs, we are still on the upside of the learning curve in this area. This current state of affairs demands that the informed buyer not only take great care in selecting a particular transport and processor, but must also compare a number of digital cables in his or her own set up. Let's take a brief look at some of the ways that manufacturers are improving the digital link.

I'll start with the transmission and receiving circuits. The transmitter on the output board of the transport is normally made from a pulse transformer on a chip that establishes the output impedance, bandwidth, and speed of the signal. A significant portion of the "sound" of a transport is dependent on the quality of this device and the associated circuitry up through the output connector. Speaking of connectors, neither XLRs nor RCAs are really suitable for linear transmission of a digital signal, as they were designed for audio frequencies. Until some clever designer figures out a better method, I suspect that these connectors will remain a limiting factor in the performance of some interfaces.

The digital input receiver is the most important device in the interface. Its primary job is the recovery of the data and clock signal and the separation of the audio data from other digital information like the subcodes according to S/PDIF or AES/EBU standards. It normally consists of a line receiver and phase-lock loop or PLL on a single monolithic chip.

As mentioned earlier, older chips had output clock jitter levels of only 5 nanoseconds or so. Newer devices like the chip by Crystal Semiconductor (found in a few top flight processors by Theta, Krell, and others), along with the proprietary receiver in the Levinson #30, are said to have jitter specs under 200 picoseconds. A few of these companies have added their own companion reclocking circuitry to these input chips to further enhance performance. According to Dr. Steve Harris of Crystal, their input receiver incorporates an extremely quiet voltage control oscillator in addition to a phased-lock loop circuit that actually attenuates some of the existing random jitter in the signal.

Whatever the technical explanation, it is obvious from the sonic improvements conferred by these new input schemes that older chips were one of the real bot-

tlenecks in the development of truly musical sound from digital. One would expect that these new input circuits would lessen the differences between various transports and cables. While this is true, differences in these components still outweigh the differences between some of the processors.

Earlier we talked about the problems of impedance fluctuations and associated reflections in digital cables. Another problem with electrical cables can be ground-borne electrical noise and RF interference. One way to solve all these problems in one shot is with a good fiber optic link. This has led to the increasing popularity of S.T./AT&T type glass optic transmitters and receivers with quality glass cables. In spite of its significant advantages over the electrical digital links used to date, the S.T. devices have some limitations. For one, bandwidth is typically limited to about 56 MHz, although some implementations go as high as 100 MHz.

If the proponents of 300+MHz performance are correct, then the present S.T. connectors will never give us the best from the CD format. Incidentally, quality single fiber cable, when used in lengths of less than 50 feet, can support a virtually unlimited bandwidth. The S.T. transmitters and receivers use an LED for transmitting the light pulses after conversion from an electrical signal. These devices are more precise than the similar setup used in the TosLink system, but they all have some switching anomalies that can result in timing errors. In addition, the S.T. receivers, which convert the light pulses back into an electrical signal, contain a pin diode and a wideband amp in a sealed device with the connector attached, were designed for computer networks, not high-end audio. These diodes and amps are inherently "noisy" themselves.

Last but not least, the S.T. interface is quite expensive, ranging from about $700 to $1800 for connectors and cable.

But before you go and jump off the AT&T bandwagon . . . *listen* . . . because despite these theoretical and actual disadvantages, when used with a good (meaning well polished) glass cable, the S.T. system has been considered, until very recently, superior to most electrical coax interface components.

Challenging the more expensive optical interfaces are the new dedicated electrical digital cables, which are attempts at creating a near-perfect "transmission line." These designs, in essence, aim for maximum bandwidth, a constant characteristic impedance of 75 ohms, and an impedance-matched termination network that can absorb any reflections that do develop. Care is also required to minimize group delay of the critical frequency components of the signal.

In practice, these new cables all seem to contain: exotic high-purity conductors such as silver or 6-nines copper; elaborate shielding systems in unique configurations; special dielectrics; precise soldering techniques; and labor intensive construction. We hope to have detailed reviews of some of these state-of-the-art cables soon.

For those of you who are in the market for a digital link now, I'm aware of several excellent examples of the new generation, top shelf 75 ohm cables: Tara Lab's new Digital Master, $595; Univocal's Aural Symphonics Digital Statement, $350; Goldmund's Lineal Cable, $495; and Madrigal's new MDC-2 Fat Boy coaxial cable, $285. I urge you to audition any of these.

Where price is a consideration, I've also heard superior performance using Aural Symphonics Digital Standard, $195; Music Metre's Silver Digital Cable, $200; Kimber Kable KCAG Silver, $175; and Theta's Coaxial Cable, $180. (All cable prices are quoted per meter except for Goldmund Lineal, which is per 1½ meter.)

If you're using glass fiber optics, there is a real difference between various cables. This has to do largely with the extreme care required in polishing the hair-thin glass fibers. The polishing should be performed with inspection under a microscope. In contrast to the excellent optical links by Aural Symphonics and Theta, I've also heard glass cable that seemed defocused and a bit dark. Even with the theoretical limitations of the S.T. link, it certainly conveys a clean, clear window into the music, with a very natural soundstage when done right. I'd love to hear an optical system capable of 350 MHz bandwidth and very precise pulse characteristics. Alas, the problem of cost and standards, I fear, is prohibitive.

This brings us to what may be the next phase in the evolution of the high-end consumer digital interface: The use of the AES/EBU professional format in home systems. The Levinson #30 already has it, and the Crystal input receiver used by other state-of-the-art processors can support AES/EBU.

Essentially, this standard uses a balanced configuration with 110 ohm impedance, XLR connectors, and high quality transformers for the transmitters and receivers. AES/EBU is designed to handle 24 bit, 330 MHz signals, and at 5 volts has a better signal to noise ratio than the consumer interface. The balanced design has the same principal benefits as any balanced cable: greater rejection of unwanted noise. When properly implemented, the transformers used in this interface format should achieve most of the electrical isolation benefits of an optical system. It would, of course, require a different cable design and XLR connectors.

I've heard from others that the AES/EBU interface, when properly set up, can combine the beautiful soundstaging characteristics, presence, and air often attributed to the best S.T. applications, with the excellent transient attack, articulation, and tonal balance of the better coaxial systems.

Whether the AES/EBU format emerges as the final winner and finds greater acceptance in high-end components, or whether there are, in fact, unique attributes due to the electrical isolation of the fiber optic interface that can be enhanced and improved upon through new techniques, remains to be seen. On the other hand, continued improvement of single-ended S/PDIF transmitters and receivers coupled with the new top-of-line 75 ohm cables may well prove to be the most practical, cost-effective, and most widely used approach. I do know that a few of these state-of-the-art electrical cables sound mighty good.

The explosion in knowledge of digital music reproduction, although showing some signs of maturing, is still expanding at a phenomenal pace. Indeed, with the development of improved power supplies, transports, analog output boards, and advances in the digital interface, it seems that the whole character and potential of digital music takes a new leap forward every six months!

While trying to keep up with these improvements can be rough on the bank account, it highlights the wisdom of insisting on upgradeability of your digital components, particularly those over $1000. On the other hand, those who have been waiting until digital reached an "acceptable" level of musicality need wait no longer. Proper matching with the new generation of components can result in truly wonderful music at several price levels; just remember to pay as much attention to the digital link as you would to the more expensive components.

I would like to thank the following people for their generous offering of time and expertise: Dr. Steve Harris, Crystal Semiconductor; Mike Wesley, Madrigal; Matthew Bond, Tara Labs; Steve Hill, Straightwire; George Cardas, Cardas

Audio; Bill Peugh, Goldmund; Tom Dzurak, Univocal; and Mike Moffat, Theta Digital.

POSTSCRIPT

Speak of the rapid change of digital progress! No sooner had the ink dried on my article about the digital interface than I get word from the Chicago C.E.S. about a potential new breakthrough in this very area.

You may recall, just a few paragraphs earlier, I was dreaming of an optical interface with the advantages of electrical isolation found in the S.T. and TosLink systems but without the limitations in bandwidth or pulse transmission irregularities inherent in those interfaces. Well, maybe the tooth fairy was listening! It seems that Theta Digital, with cooperation from specialists in the field of laser optics, have developed a *laser* based optical interface for digital audio.

In our previous look at the drawbacks of the AT&T and TosLink fiber optic systems, we described the LED type diodes used in their transmitters and receivers. These LEDs are relatively slow with limited bandwidth capabilities compared to better electrical links and to the ideal bandwidth for the CD format. They transmit a jitter-prone multi-mode, broad band range of frequencies, with pulse characteristics of a peak followed by a dip followed by a peak and so forth.

In an attempt to minimize or eliminate these drawbacks, Theta has designed an optical interface incorporating true laser diodes instead of LEDs. These laser based transmitters and receivers not only have far smoother pulse transmission, but can also send a bitstream with a bandwidth of 1 *gigahertz*!! Appropriate glass cables of lengths common in audio systems are able to support bandwidths this high.

Theta has a working prototype of the laser interface and is busy developing a production version at this time. They will have to seek FDA approval for the device since it uses a true laser. Although the power of the laser is quite low, one should not stare directly at the beam for any length of time.

By the time you read this, Theta will have also introduced a companion product, tentatively called "Optigue" (pronounced "opti-goo"), that can also be used with S.T. or TosLink systems. Basically, air has a refractive light index of 1, meaning that the ratio between "straight" light and "bent" (or refracted) light in air is 1 to 1. A typical S.T. interface has a refractive index of 1.3. This difference in refraction of 1.3 versus 1 will cause some unwanted reflections to occur.

When you insert a fiber optic cable into a connector, the end of the cable butts up against the LED. It is at this junction that the problem occurs. Optigue is applied between the ends of the cable and connector and acts to fill in and smooth this interface thereby bringing the refraction index close to 1. Optigue is claimed to make a noticeable improvement in the sound of both S.T. and TosLink setups.

I imagine that the new laser interface will, at least at first, be more costly than its electrical counterparts, and will be used primarily in state-of-the-art systems. This should leave plenty of room for continued development of AES/EBU and S/PDIF electrical interface components. In any event, if it lives up to its promise, this new approach to transmitting the bitstream between transports and processors may help establish a new benchmark, eliminating the interface as a variable in digital sound reproduction. Stay tuned!

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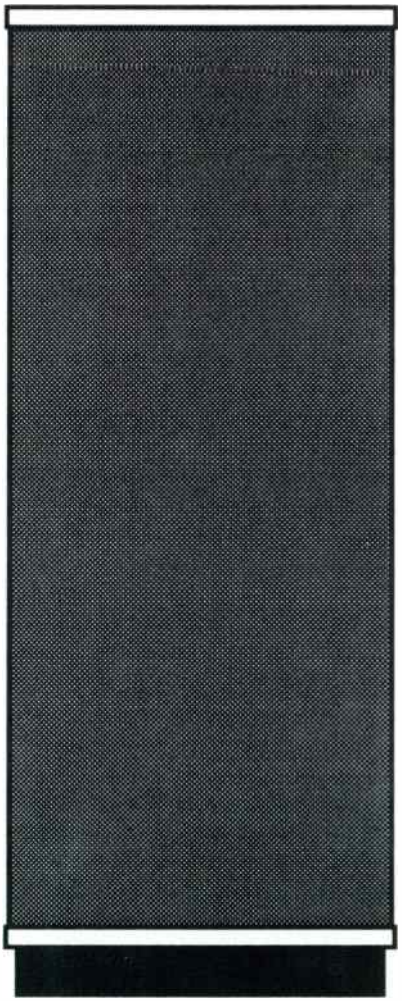

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High End Audio Electronics: Alchemy vs. Reproduction

An Engineer's Viewpoint

Jon Schleisner

[For many people associated with high end in the tri-state area, Jon Schleisner has been their savior, confidant, and chief audio surgeon. After earning his degree in electrical engineering (BSEE, 1983) Jon began working for the General Instrument Corporation, for the last eight years working in their power semi-conductor division.

He formed his own audio company Precision Audio (223-47 65th Avenue, Bayside, Queens 11364; phone 718-631-4669), where he repaired, modified and built audio equipment for the hi-end community. Two of his Precision Audio CD players, the DIVC 471 and 880 (1989), were both reviewed and recommended by Stereophile. Currently he is working on prototypes of new products, and continues to repair and modify high end gear. Feel free to contact him with your problems and questions, as he enjoys talking to audio people, be they techno-freaks or rank audio amateurs.—David Nemzer]

Since the initial baby steps of sound recording, the objective has been the same: To bring the sound of music into the home (or other surroundings) via mechanical means in the most lifelike manner possible. The quest for ideal sound reproduction, however, has led professionals in the field and consumers down separate paths.

To explain this phenomenon, the first question that must be resolved is: Why do we buy (or build) high end audio equipment? The reasons become clearer when we divide audiophiles into two groups. First we have the true music lovers, who attend (live) the music of their choice on a regular basis. This group also includes people unable to attend live performances for whatever reason.

The second group contains all those folks interested in sound reproduction for its own sake. It has been my experience that most audiophiles fall into the second category; I know several audiophiles who attend live music on a regular basis, but they are few and far between.

This second group has a variety of participants: the status seeker, the identity seeker, and those who are genuinely fascinated with the mechanics of sound reproduction. The status seeker we can throw out. Their sound systems are overpriced and under used. The hardware is akin to the Rolex in the drawer and the Leica 35mm camera collecting dust next to the two thousand dollar tripod. Next, the identity seeker is one who has a very specific agenda for the sound system—it is an extension of the individual's personality, or it presents an image the person would like to project for themselves. For years we've all been hearing about amplifiers with "balls." Need I go further down this dragstrip?

The person who is interested in the technology of sound reproduction seems to be the dominant force in the marketplace. This person enjoys the music, but the equipment (like the play) is the thing. *[But as long as we're quoting Shakespeare, remember, "'Tis mad idolatry/To make the service greater than the god."—ED.]* This is the group I personally fall into. I became interested in electrical engineering out of a fascination with sound reproduction and the quest for the ultimate "truth."

All of these gyrations to explain my vantage point!

AS I SEE IT

The electronics in a sound system should have the lightest "finger print" possible. Coloration of any sort should be kept to an absolute minimum. Where zero coloration is impossible, errors should be scattered and not have similar characteristics, as colorations of a similar nature tend to be cumulative. This is not an endorsement of any "finger print"; all errors reduce information retrieval and truncate the ultimate resolution of the system. Coloration obscures information! Abrasive sounds and errors of commission, of course, are least desirable.

Some audio products are designed to offer an attempt at true sonic purity; others take the alchemist's approach, which creates a specific sound imparted to every signal that passes through the component. Tubed high end equipment offers a look at this controversy. The "classic" tube preamplifier has a set of predictable sound qualities: reduced low bass, puffy mid-bass, excellent "you are there" midrange, and a gently rolled off top end. The standard solid state preamplifier has another sonic signature. The low bass is relatively clean, midbass is on the subjectively thin side, the midrange lacks "presence" and the top end is on the aggressively forward side. Neither of these components resembles the dreaded "straight wire with gain." Both of these components leave their own specific finger print on the music; both obscure information.

What to do? In my opinion, the objective should be to select the component that colors the sound the least. How do you do this? First, have a reasonable selection of source material to use as a reference. Next, get to be intimately familiar with this music on your system *and others*. It is not advisable to attempt to balance tonal problems of the loudspeaker/room with colorations indigenous to the electronics. This will lead to a system with reasonable tonal balance but with substantially reduced information retrieval capabilities.

When judging an audio component, evaluate the component in a familiar system (your own if possible). Ask yourself the following question: Does each selection have and retain its own sonic signature, or does all the music seem to have been recorded in the same environment with the same microphones?

There's one good tip-off that indicates a high (and sometimes deliberate) coloration in a piece of audio gear: Beware of components that sound out of character. An example of this is a solid state preamplifier that sounds warm, lush and tubey. Your first reaction is probably, "This is great. It's non aggressive. It doesn't have a mean bone in its body." The component is probably very colored. Again, ask the question, Does each selection, CD or phono, sound different, or does everything have a similar sound?

Likewise, the finest tube equipment doesn't "sound like" anything. An example of such a piece is the preamplifier manufactured by Convergent Audio Technology. It's not perfect, but it is extremely difficult to pin a sonic signature on this machine. The best sold state and valve equipment will converge at the sound of nothing. It has always struck me as the ultimate twist that the finest audio electronics, the ones I aspire to design, are ultimately inaudible!

Another indication of sonic finagling becomes apparent when a component is preferred for one particular instrument but not another on a consistent basis. Consider the case where all piano recordings sound too good to be true, but the violin sounds consistently wrong. Some audio designs have a sonic signature that reinforces the harmonic structure of the piano; the sound is great when reproducing the ivory keys, and unnatural when attempting strings.

Two interesting methods of making transistors/FETs sound warm and tube-like: one, add large amounts of harmonic distortion at low levels to "enrich" the sound at normal volume while maintaining good measurements at high signal levels (where the reviewers do their measurements). The only problem with this scheme is that it really doesn't simulate tube performance at all. Quality vacuum tube designs have extremely low distortion at low levels, and only exhibit large amounts of harmonic distress when driven to high output levels.

The other trick is to design a deliberately slow amplifier with an artificially reduced slew rate. This slow amplifier operates normally at low signal levels, but when driven hard during loud passages or during sibilants truncates the upper frequency information, rendering the device with a dark, warm sound character.

The question arises, "Why do I only pick on tube type colorations as examples?" The answer is simple: All but the most novice audiophile can detect the wonderful sound of solid state edge without any help from me!

The same rules apply to power amplifiers, but now the game becomes more complex. With the load (the loudspeaker) varying in characteristics from one application to the next, amplifier evaluations become very speaker dependent. What might drive a Quad electrostatic speaker is hardly suited to an Apogee Diva. All evaluations of power amplifiers should be made on the loudspeaker of choice.

DESIGN PHILOSOPHIES

The manufacturers of upscale audio equipment fall into two groups. The first is dedicated to the pursuit of true, clean,

linear, honest sound. They aspire to provide the lowest level of coloration (or lightest finger print) possible in the hardware they bring to the market place.

The second group approaches the design of audio equipment with a "no holds barred" attitude. The philosophy is simple: make audio equipment that sounds different—not necessarily accurate or true to the music, but salable. Some companies, however, sit on the fence. ARC comes to mind as one of those. Depending on what model you chose, or what time period you pick, the ARC product may have been a reference point for accuracy during its time, or it may have been a relatively colored piece of gear.

The manufacturer cannot be arbitrarily blamed for this situation. Case in point: when ARC released their first solid state preamplifier, the SP4, about fifteen years ago, it almost put them out of business. It was panned by reviewers and consumers alike. If that same model were released today I'm willing to wager it would be a hit. Perceptions change over time; the audio community would no longer be in an uproar simply because ARC dared produce a solid state product.

THE MEASUREMENT ISSUE

Specifications matter! I know that this concept rains on many parades, but this is reality. Most manufacturers who will tell you that specs don't matter have lousy measured performance.

Take a classic vacuum tube amplifier. The left channel measures .02% IM distortion at one watt output. The right channel reads .4%, or twenty times higher. This is not acceptable. The two channels sound different. The amplifier will sound fuzzy and the sound stage will be all messed up. This sort of thing is very common in tubed equipment.

Maintenance is a must with tubed products. The bias point of the output tubes is a moving target at best. As the bias points move, so do the distortion characteristics. Another disconcerting fact: The optimum bias points cannot be set without a distortion meter. If you are going to own a valve amplifier you must be prepared to maintain it to derive optimum performance. Tubed preamplifiers do not usually have bias adjustments, and so require less maintenance.

A few words about exotic materials and audio reproduction: Why is it that when two materials are compared for an application in high end audio, 99 times out of 100 the material that costs $200 an inch is *always* better than the one for 10¢ a foot? I'm very suspicious of this phenomenon. And why is it that copper wire is acceptable for the space shuttle but not my power amplifier?

I understand the need for exotic, sometimes very expensive, materials in loudspeakers. The often extreme and conflicting physical requirements of drivers and cabinets can really push the characteristics of conventional materials to their limits. However, I will *never* understand the need for interconnect cables costing more than a fishing boat. Get a life! The audio signal that reaches your system has already been through many hundred feet of industrial strength wire. (Holy Belden, Batman!) Yes, I know one or two recording companies, like Chesky Records, who may be equipped with "audiophile grade" wire, but these are rare, and if those are the only recordings you listen to then you are beyond help anyway.

Capacitors do tend to sound different. Panasonic mylar capacitors have a different sonic signature than F-DYNE polystyrene parts. Resistors are a different story, and I spent forty dollars to prove it. I set up a test fixture that enabled a comparison between ten dollar Vishay resistors and ten cent Yago resistors (available from the Digi-Key catalog). To

make a long story short, in controlled testing (I'll explain my methodology upon request) there was no difference between attenuators made with either brand of resistor. The Vishay resistors, however, sound much better in the product literature!

GUIDELINES

When evaluating equipment for possible purchase, try to follow these rules of thumb:

1. Try to get the piece of gear in your home on your system.

2. Only make one change at a time, or else you may never know what audible changes to ascribe to any single piece of hardware.

3. Make sure to use at least some natural (non-electronic) sources. It can be a human voice, violin, oboe, but *not* an electric piano! Sounds born of electronics are easily reproduced by electronics. Sounds originating from flesh, wood, cat gut or brass are a much greater challenge.

4. Try not to look at a piece of equipment when making an evaluation; your reaction to its appearance can have a great influence on the perceived sound. Rosewood cabinets and gold front panels often have a warm "sound." Light colored faceplates sound (you guessed it) bright!

Finally, be true to yourself. You know your personal reason(s) for being interested in premium audio components. If you purchase components consistent with your desires, you really can't go wrong. After all, these are not pacemakes or other life support electronics. This is entertainment.

Binaural Recording

John Sunier

[John Sunier is host of the national radio program Audiophile Audition, *carried weekly on over 150 public radio and commercial stations. WNIB in Chicago (92.1 FM, Saturdays at 9 p.m.) is the latest station to begin carrying this program aimed at audio buffs.]*

BINAURAL . . .

Let's start with the definition of Binaural Recording that appears in Bruce Bartlett's excellent *Stereo Microphone Techniques* (Focal Press 1991): "A 2-channel recording made with an omnidirectional microphone in each ear of a human or a dummy head, for playback over [stereo] headphones. The object is to duplicate the acoustic signal appearing at each ear."

Even audio buffs supposedly in the know are often confused about binaural, due to the mistaken use of the term back in the 1950s by many who used *binaural* and *stereo* as synonyms for one another. Recording pioneer Emory Cook (remember the twin-tracked early stereo LPs?) was one of these. Yet in the notes that came with all RCA Victor 2-track stereo pre-recorded tapes back around 1956 was this:

> Stereophonic recording differs from Binaural (a term sometimes incorrectly applied to stereophonic records) in that the microphone placements are selected for loudspeaker reproduction. Binaural properly applies to a two-channel system designed for headphone reproduction. It thus requires the use of two channels fed by microphones spaced about seven inches apart (normal ear separation).

That definition just about tells the tale. Almost all of us have noticed the tremendous difference between hearing a stereo recording on speakers and hearing it on headphones. Headphones seem to put a giant sonic magnifying glass on all aspects of the recording, including the stereo separation. The sound seems to be localized totally inside your head rather than in the space outside your head. The problem is that while over 200 million stereo headphones have been sold in the past ten years in this country, the source material that nearly everyone is listening to was designed for playback over loudspeakers, not headphones.

With speaker playback, the left channel's sounds are meant to reach the right ear, and likewise with the right channel and left ear. Binaural, on the other hand, keeps the left and right channels absolutely separated from the original dummy head (or real head) all the way to the listener's stereo phones. This applies whether the medium is a recording or a live radio broadcast. The original pick-up apparatus may be as simple as two omnidirectional mikes seven inches apart separated by an acoustically dead board or baffle to simulate the effect of the human head. It may also consist of two tiny omnidirectional condenser mikes placed in the ears of the recordist and run to a small high quality portable recorder such as a Pro-Walkman or DATman.

Commercial binaural recordings generally use one of two different expensive professional "dummy heads" (*Kunstkopf* in German). In fact, both come from Germany. The Neumann KU-81i head was probably used—often in conjunction with other mikes—on a CD or two in your own collection. Its latest model has wider-range transformerless mike preamps and further improvements in compatibility for speaker playback. The newer Aachen Head Acoustics system is more complex, with special equalization to achieve the most natural reproduction on both speakers and headphones.

Some recording engineers feel either of these mikes is capable of making more natural and well-balanced ordinary stereo recordings for speaker playback than the very best purist stereo mike techniques. Of course, the full binaural effect is not present in speaker playback (unless you have either of the Lexicon surround processors that feature a unique transaural/binaural circuit for successful speaker playback of the effect).

And if you haven't yet heard true binaural reproduction, how can I describe the experience to you? (I've been told that few of The Audiophile Society members even own quality stereo headphones.) Well, the most frequent indication that someone who has put on headphones is hearing binaural for the first time is a visible dropping of the jaw—followed by exclamations of surprise, wonder and unbelievability. Binaural, rather than trying to bring the sounds into your listening room, takes you to where the sounds originally occurred. You are aware of sounds everywhere in the recording or broadcast space. Your ears don't just swing both ways in binaural—they swing six different ways: right & left, forward & back, up & down!

The idea is allied somewhat to the most sophisticated of the surround sound encode/decode processes, Ambisonics. In this system, information picked by up by a cluster of four mikes is coded into the three different types of directional information: lateral, depth and height.

In binaural the pinna, or outer ears, of the dummy head or human head of the original recordist set up subtle interference patterns that locate the sounds around the head quite specifically in space. Sounds coming from directly in front bounce off the rear part of the outer ear; sounds from below bounce off the top part of the ear. When a sound is directly in line with the left or right ear there is a straight shot to the ear canal, and this provides different directional in-

formation from the other approaches. Due to "the cocktail party effect" we can "steer" our binaural hearing around a noisy room and focus it on the one person we want to talk to and hear while minimizing the distraction of other voices.

One of the first experiments with binaural, back in 1881, compared the effect to the popular stereoscope pictures of the period. The inventor said of his binaural patent, "This double listening to sound produces the same effects on the ear that the stereoscope produces on the eye." He set up a series of carbon telephone mikes in pairs (about 7 inches apart) along the edge of the stage of the Paris Opera. As the singers performed on stage, their voices were carried on twin telephone lines all the way to a few subscribers' homes, who had two lines. They put the earpiece from one line to their left ear and the earpiece from the other to their right ear. Fortunately, a wide frequency response is not vital to conveying the binaural effect, because surely the French phone system of the time was quite primitive.

Sounds in motion are especially effective in binaural, as well as sounds that are spatially separated. I have some binaural tapes of a symphony orchestral rehearsal, and for demo purposes it must be admitted that feeling like you are sitting right on stage with the orchestra during the rehearsal—with music stands clanking, chairs squeaking, and the conductor walking around to help some of the players with small problems—can be more exciting than hearing the final performance of the music. Sound effects, such as a motorcycle or train passing by, take a quantum step in "you are there" realism with binaural vs. the old-fashioned stereo demos of trains passing between your two loudspeakers (and proceeding no further).

Not to take the words of just yours truly, here are some typical responses from first-time binaural experiencers:

"I . . . was simply amazed at the specificity of the image."

"I must admit that this, my first binaural experience, has left me without words."

"There are no other techniques that, in my opinion, even come close to the 'you are there' realism of binaural."

"I was very excited to read that there are CDs recorded using this unique technique."

"I heard a demonstration of binaural sound at the Disney/MGM Studio and was very impressed . . . I've been trying to find out if there was anything available using this technique."

"I didn't realize there is something beyond stereo. It was a real ear-opener!"

[And borrowing from Gertie Stein:] "There is an incredible 'there' there when binaural stuff feeds a pair of headphones!"

BINAURAL HISTORY

There has been sporadic interest and activity in binaural around the world since those early days late in the 19th century. In the middle 1920's several radio stations in Connecticut and elsewhere made experimental binaural broadcasts by transmitting the left and right channels on two different AM frequencies. The two transmitters were fed separately from either the left-ear or right-ear dummy head mike in the studio. Listeners, who were already listening on headsets for the most part (primitive speakers were just coming into fashion), merely put on two mono headsets, each tuned to a different station.

Some West German radio stations have devoted time to special binaural transmissions—often of radio dramas that they call "hörspiel." There has also been interest in Japan. JVC even demonstrated a system of binaural loudspeaker

playback known as Biphonic Sound some years ago, and both JVC and Sony manufactured inexpensive combination headphone/binaural mikes for consumer use.

In 1970 *Stereo Review* offered a binaural demonstration LP of music and sound effects that used a homemade dummy head known as the Blue Max. Some of it is still available on cassette. There have been many binaural recordings available on LP in Germany, mainly of classical material. The disadvantage of employing either analog LP or cassette for binaural material is the noise problem. The surface noise or hiss that we have become accustomed to when listening via loudspeakers is often intolerable with headphones on your head. The greater clarity via headphones makes extraneous noises in the source stand out and detracts from the total sonic experience of binaural. Add to that a peaky high end in some headphones—which further points up surface noise and hiss compared to speaker reproduction.

As a result of this, the compact disc has proven to be the perfect medium for binaural. The excellent signal-to-noise lets the listener concentrate on the sounds and begin to forget that he or she is actually listening to a recording—one just starts to take part in the original music or sound-making!

This recent step forward in the promulgation of binaural has been joined in recent years by another important advance. Originally, binaural had two major disadvantages working against it: Headphones were required to experience the thrilling effect, and compatibility with loudspeaker playback was poor. Over loudspeakers, not only did you loose the uncanny localization effects of binaural, but the sound became

much poorer than ordinary stereo. There seemed to be too much reverberation, the miking seemed too distant. Vocalists sounded off-mike, and in radio dramas voices were often unintelligible. Music reproduction sounded thin and lacking in bass.

The first disadvantage still holds (except for the special Lexicon processor circuits already mentioned), but the second has been conquered through extensive research done primarily in Germany. The artificial heads have been redesigned and the electronics now feature special equalization to insure compatibility of the resultant recordings with both headphone and loudspeaker reproduction.

This research into binaural hearing and reproduction is part of a larger interest of the scientific community in the broad area known as psychoacoustics. Products such as Hughes' SRS, B.A.S.E., Roland Sound Space, and QSound have come out of some of this work. They attempt to achieve a binaural-like surround localization with only a single pair of speakers through manipulation of phasing and equalization. With certain material these systems can sound convincing, but they cannot equal a properly set up Ambisonic system with speakers at the sides and rear, and they cannot come close to the experience of true binaural on headphones.

While binaural can be heard with any stereo headphones down to the simplest "ear-buds," the better the phones, the more amazing the experience. In the past I have found some of the Sony phones around the $100 price point to be excellent. I can't vouch for the current models since I haven't heard them, but stay away from the MDR-V6 (once recommended in *Consumer Reports*) because it destroys some of the binaural effect. For binaural, the best of the under-$500 phones I've heard is the AKG K-500 at about $230. This has many of the qualities of the same firm's flagship K-1000 ($895), which I find the best all-around binaural phone—especially in its ability to help the listener image the sounds outside his head. The Joe Grado Signature phones at $500 are also excellent and of interest to those who feel the AKGs too bizarre with their little speakers suspended on either side of the head. Grado also has both higher and lower-priced versions.

The Stax electrostatic earspeakers have been the standard for binaural for many years. Their top-of-line Lambda Pro Signature has a dedicated tube amp, and goes for over $2000. Sennheiser—long active in binaural with their own simple $600 mike system and demo recordings—recently introduced a super headphone with a separate 400-watt monoblock tube amp feeding each ear! ($8000). A new trend showing the increased interest in headphones and binaural is dedicated high-end headphone amps—Melos, Grado, AKG and Krell have them so far.

Probably the most-heard modern demonstration of what binaural can do is the sampler CD known as The Space-Sound CD from the AudioStax label in Germany. Many visitors to displays of high-end headphones at audio shows or dealers have been regaled by Dr. Gunther Theile and his sexy-voiced assistant Sabine on the opening one of the 21 varied tracks on this boxed album. Dr. Theile is one of the top experts in binaural, working at the Institute for Radio Technic in Munich where this recording was made. Sabine describes the room and where the good doctor is moving in it, and with one's eyes closed the feeling is that you are in that room with Gunther and Sabine. One selection on this CD is a highlight of sonic voyeurism, as we share a shower with someone named Marianne—including even putting the shower cap over our own ears! That must have been an interesting recording session to sit in on . . . .

Other tracks serve as a sampler of the music available on this label, with ex-

cerpts of a woodwind work by Ibert, an Ellington small jazz group performance, a Wagner Overture, organ works of Bruckner, choral music of Monteverdi and C.P.E. Bach, and a jazz mechanical Orchestrion. There is also a violin demonstration and a visit to the clicking symphony at a watch museum.

Tango Subversivo by Jurgen Sturm's group Ballstar (on the German Nabel label) has a track that ends with one of the irrepressible jazzmen loudly whispering "cha cha cha" in one ear and then the other. On first hearing I nearly jumped out my skin.

So, have I enticed you into the world of binaural? Or even of quality headphones in general? If so, you'll want to know how you can experience some of these sounds for yourself. For those within earshot of one of the many stations that carry my weekly radio program *Audiophile Audition*, all you have to do is be patient until early February 1993, when you'll be able to hear one of my twice-yearly "All-Binaural Broadcasts." (Unless you're one of those audiophile purists who don't even own an FM tuner.) Check with your local public radio or concert music station, or write us for detailed programming and station information sheets at the address listed below.

You'll need no special equipment whatever aside from stereo headphones. If you have no way to plug phones into your tuner, receiver or integrated amp, you could tape the program on a cassette player that does have a headphone jack; you can then listen to it again anytime and anywhere.

The binaural specials always bring in more listener mail than other programs of *Audiophile Audition*, and since binaural recordings of any sort are almost impossible to find in the shops, I decided to assemble all the worthwhile ones available world-wide and offer them as a mail-order catalog. That's *The Binaural Source*, and our second catalog contains over 70 true binaural CDs and cassettes. Radio dramas, sound environments and a variety of music recordings are featured, mostly classical and jazz. More interest in binaural is being shown by a couple of record labels, and there will be a growing library of CDs issued in the future.

For the binaural catalog only, send $1 to The Binaural Source, Box 1727AV, Ross, CA 94957, or call 415-457-9052, PST. If you would also like a free bibliography of other articles about binaural, please ask for that.

For a schedule, program listings and station list on *Audiophile Audition*, write to Box 1621, Ross, CA 94957 and enclose a #10 SASE plus $1, or four 29 cent stamps for P & H. If you also want the catalog, the cost is $2.

Made In The Shade At Mapleshade Studios

Les Turoczi

There is always a bit of mystique, fun, and excitement associated with being behind the scenes at a recording studio, observing activities that are of high priority to music lovers and audiophiles. Having been fortunate to visit studios of several different styles, I was not ready for the unique and fascinating situation that exists under the name of Mapleshade Studios in Upper Marlboro, Maryland.

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Chief engineer and owner Pierre Sprey has established a marvelous setting in this rural Washington, DC location, where musicians can find the time and space to be at peak creativity and comfort. The studio itself is an old and stately mansion that is part of a former tobacco plantation. The quaint and rustic nature of the overall set-up exudes a novel approach to capturing sound on analog tape, which while not specifically "high tech" is, indeed, far from primitive.

SOME BACKGROUND

Mr. Sprey carries unusual credentials, not the least of which is his previous career as a principal member of the aircraft design team that created the F-16 and A-10 jet-fighter bombers. Coming out of an engineering background, with advanced training in statistics, he established himself as a Pentagon consultant for this complex work. His love of music, especially jazz, also inspired him to be an amateur recordist years ago, and even though his Pentagon duties cried out "high tech," he preferred to do things in a simpler, more direct and uncomplicated fashion for both the aircraft designing and subsequent recording adventures. A firm belief in the principle of Occam's Razor—the simpler the solution, the better the result—has been a guiding philosophy that has, in my opinion, paid off handsomely for Pierre and his various efforts. "Less is more" is the truly the prime force at work at Mapleshade.

During my visit I had the opportunity to tour the facilities, carry out a wide-ranging and stimulating interview, and to savor a most enjoyable meal, crafted by chef Sprey with adept and careful attention. We also listened to his playback reference system, auditioning some new recordings that should be of interest to music lovers everywhere. The distillation of that visit follows.

WHAT MAKES MAPLESHADE DIFFERENT

To start, Sprey is incredibly sensitive to the needs and moods of the musicians he is recording. In fact, as that word has spread to various jazz artists, new and old alike, he is being sought out by them primarily because of the manner in which he allows them the space and time to relax and find that magical moment when creative juices are at peak flow. He does this by inviting the artists to stay at his studio/mansion for as long as it takes them to get into the groove; his culinary talents also seem to facilitate the process in a strong way. As Pierre puts it, "When they feel their best, they perform their best, and that's the time I want to capture their sound on a recording."

Knowing how the "time is money" proverb usually operates (ever so harshly in most other recording operations), the circumstances at Mapleshade are polar opposites to those constraints—and it shows in the outcome. Notable musicians such as Shirley Horn, Clifford Jordan, Randy Weston, Walter Davis, Jr. and many others have been captured on recordings by Pierre Sprey.

By the way, the idea of doing things in the simplest, most efficacious fashion apparently got Pierre into various debates with his Pentagon bosses. You see, he wanted to make the F-16 the fastest, cleanest, simplest, and most uncluttered fighter around. As others wanted to keep adding fancier—and weightier—instrumentation, along with gadgets such as heavy air-conditioning compressors, Sprey realized that the speed and maneuverability of the plane would be compromised. Sometimes he won the debate, other times he lost. Through it all he nonetheless kept to the adage that Simpler is Better/Less is More. Now he has full say in the application of that philosophical perspective, and it is employed at every turn in the operation and design of Mapleshade recordings.

Having heard several of his recordings on my home system, I can confirm that he does indeed know how to capture music at its fullest.

The insistence on using high speed analog tape recording for the mastering process is the first sign of Sprey's commitment to simple but effective methodologies.

His approach to equipment is to customize it, and his hand crafted arsenal includes Crown PZM and Josephson condenser microphones, short cable runs, a Sony open reel tape deck, battery powered electronics (wherever possible), lead weights for damping applications, and amplifiers and preamps of his own design. His comprehensive work on the microphones alone would be truly enlightening to many engineers, were he willing to reveal those secrets.

Interestingly, no EQ, compression, or noise reduction is employed, nor is anything like the common mixing board seen. Tell me how much simpler you can get! It should be noted that Sprey goes to the extreme of physically carting his highly modified Sony TC-880 tape machine and tape recordings to Bob Katz in New York City in order to carry out the digital transfer process using a very special A to D custom machine at Bob's facility.

I should note that Pierre's playback system is a tweaked melange: Martin-Logan CLS IIa electrostatic panels (operating full range), coupled to a pair of enormous Rohrer columnar/tubular, slot-loaded subwoofers, and augmented with a pair of small ribbon supertweets, powered directly from a hybrid tube/solid state amplifier made in Virginia and known to a select few as the "Magic" Amp (which he helps to distribute through word-of-mouth), all strung together with his custom "Omega Mikro" solid-core wires and interconnects. No preamp of any kind is used, and Pierre sets his playback volume passively using discrete resistors.

He doesn't believe in or use balanced configurations, since the degradations associated with the necessary transformers get in the way of sound accuracy and naturalness. CD or vinyl sources vary over time at the studio. By the way, I was able to hear a few master tapes at the studio on this system, and they sounded extremely clean, detailed, well balanced, fast, alive, and natural. The tapes were not played at timid levels, either; in fact, I've never heard electrostats really crank like this. (Pierre, by the way, attributes the clean high levels to the excellence of the single stereo "Magic" amp he prefers.)

Getting back to features that make Mapleshade different from other studios, allow me to quote/paraphrase liberally from Pierre:

- "An excellent studio must provide an environment where musicians will want to play as well as they have ever played."

- "An excellent recording must create for the listener the excitement of hearing live music."

- "We record only in live spaces where musicians can hear themselves and each other; the studio sound has a warm 'chamber' sound, not the dead acoustic of outer space."

- "Drum or vocal booths are never used, because they destroy the creative cohesion of any music group and kill the feeling of a natural acoustic space."

- "The absolute minimum feasible number of microphones and tracks are used .... Every extra microphone kills a little more of the natural space and depth around each instrument, the purity and breathiness of the singer's voice, and the percussive impact of sticks, hammers or plucked strings."

• "All of the recording electronics in use are selected by ear, not by measuring numerical specs. The equipment, which is measured after selection, shows wider frequency response, higher dynamic peaks, and much quicker transient response than standard studio equipment; the tape recorder has almost an extra octave of treble over first-rate professional machines; the planar pressure zone microphones, with proprietary modifications to both mechanical and electronic elements, are used in acoustic arrays of custom design."

Sprey's dedication to his recording and playback equipment also extends to the resident piano in the studio. It is a superbly restored 1911 Steinway Model O, usually positioned so that its soundboard sits in the middle of the 15x20x10' studio. This instrument's sound is truly wonderful, and is one of the many reasons that Shirley Horn has become enamored of the Mapleshade operation. It is clear that Sprey loves this piano—as well he should—and it has given him the repeated opportunities to experimentally develop his own approaches to recording techniques by using this Steinway O as his reference test instrument, just one room away from his listening room.

One of the several interesting audio issues we touched upon related to the sad state of recording quality, which most of us discover all-too-often as we try new discs on our own. Too many audiophiles are fed-up with buying a disc only later to find that one or two tracks out of the whole bunch are recorded acceptably enough to put up with, or, more likely, that the complete disc is a sonic flop. When I asked Pierre what we as consumers might do to improve this situation, he responded that he had found that going right to the recording engineer was probably as good a way to have an influence as any.

He has, for instance, discovered that by demonstrating the impact of changing interconnects, or other wires such as those used by instrumentalists between their guitars and amps (which are usually taken for granted by most engineers), typically astounds these folks. From then on, they are sensitized to why audiophiles go to the extremes we are noted for, and they work harder at getting things right, or at least better. (Now if each of us knows one recording engineer, and can follow through in this fashion successfully, by the year 2001 we might have much less to piss and moan about sonically!)

THE PROOF IS IN THE PUDDING

Well, I could go on about more of the novel and pioneering aspects of Mapleshade Studio and its fascinating owner/chief engineer Sprey, but I really think much of this magic and fun is available directly to you on most of the discs released so far. Don't miss *Live at Ethell's* by the Clifford Jordan Quartet (Mapleshade CD 512629A) or *In Walked Thelonius* by Walter Davis, Jr. (512631H). On *Love Locked Out* (512692) I've been captivated by the piano work of Chris Anderson, who is noted for being "the legendary teacher of Herbie Hancock"; Anderson's voice on three of the tracks might be an acquired taste to some, but for me it is heart-touching and authentically tender.

There are many other titles to seek out, each worthy in its own right, so don't hesitate to call them for their list at 301-627-0525. If you're lucky, you might even get to talk to Pierre, and share in some of his enthusiastic and enjoyable conversation on music and sound. This is the type of operation and philosophy we music lovers and audiophiles need to support strongly. Check it out!

Obscura

by David Nemser

THE HUNTING, MOUNTING, AND DISPLAY OF TROPHY VINYL

Just as there are countless ways to skin a CAT . . . oops! . . . cat, there are many ways to capture your vinyl and keep it alive and well. While a lot of companies provide materials for improving the sound of marginal or defective discs, we shouldn't forget the rest of the package—in particular, the packaging. This issue I'll be dealing with information on the maintenance of jackets, shipping of LPs and equipment, and yes, a source for rare vinyl. Maybe my friends will forgive me someday. Probably not.

ORDERING

As a general rule I don't use and won't recommend any sources that are problematic or on the edge of "good business practices." Good deals from shady sources aren't my speed, thank you. Now that there are real laws to protect mail-order customers, it is in your best interest to use suppliers who honor them.

Take the subject of returns. It is my understanding that if you order anything by mail[1], the seller must refund your money, if you wish them to, for any reason!! This includes not liking the product or not liking the color of the sky that day. Your sole obligation is that you do this within 30 days of receipt of your order. I have had to do this in the past on a few occasions; I got my money back only when I threatened to notify the US Postal Service that someone was using their services (or better yet, a Post Office Box) to conduct business, but were not following federal law in their business practices.

Remember folks, calling a person or business by phone is not technically mail order. To further protect yourself, I would suggest charging your orders whenever possible, because the credit card companies have procedures to protect consumers. Read the back of your credit card bill.

If your purchase is over $50 and less than 100 miles from where your billing address is, you can contest the purchase. The retailer is paid for your purchase when he turns in your order/payment slip to the credit card company. If you then register a strong enough complaint to the credit card company, they take back the money they gave the retailer—even though you may not have paid your charge card bill. It's all done electronically, and it is much easier than fighting with someone you paid by check. Be an educated consumer and you'll get better service.

JACKET MAINTENANCE

There are many ways to preserve or improve the condition of your pre-recorded music collections and most of these are really simple. The trick is to get the proper materials for the particular job. Most of the suppliers I've used have been in business for years and I've never had any difficulties with them.

Let's look at record jackets first since these are the most easily damaged. It was not uncommon for some record companies in the fifties to have plastic-like film coverings on the front of their jackets. Often these are found to be dirty, discolored, or distressed in some way. For these specific covers use Gold Seal "Glass Wax" (a pink can with a gold band around it). Use sparingly with a damp sponge in a circular

1 This means you have placed your order using the U.S. Postal Service. In the case of telephone orders, including those using 800 numbers, mail order laws don't apply.

motion. It should work wonders on these covers. However, it works best if you remove it quickly. Ignore the instruction on the can to let it dry first. A quart can easily last a collecting lifetime. I have tried using it on regular covers, but I don't recommend doing it unless you practice on throwaways first. Speed is the secret!

For those offended by price labels on their jackets (you mean you don't want a fellow audiophile collector to see that 99 cent close-out price sticker on the copy of Casino Royale you just paid $100 for?), let me suggest a product called "Peel." Imported from Japan by Yasutomo & Co. in San Francisco, it works pretty well but, as always, test it first on a throwaway record cover. Also, good old heavy open mouthed breathing on the sticker works. Warm moist air is the secret since hot air from a hair dryer can make the paper more brittle.

Album jacket covers and inner sleeves can be purchased in bulk from a number of sources. You can save a considerable amount by purchasing in bulk and by mail. Local stores in New York charge 10 cents a piece for 3 mil outer sleeves, but I shop by mail at Something Special Enterprises, PO Box 74, Allison Park, PA 15101 (412 487-2626), where they charge 3.8 cents each when you buy 1000. That's a lot I know, but with a friend or two it's manageable. The package weighs 40 lbs, UPS charges additional. White poly lined inner sleeves go for $59.00 for 600 (26 lbs, UPS charges additional).

I mention these weights because you should become familiar with UPS charges, as the new "mail for you" business services stores charge a great deal more than UPS. Another package service you might want to try is Roadway Package Systems (1-800-ROAD PAK).

If they operate in your area, try to use them for two good reasons. First, they are even cheaper than UPS, and second, their weight limit per package is 100 lbs—30 lbs more than UPS. We are talking good size amplifiers and speakers here. How cheap you ask? Three years ago I mailed three conrad-johnson Premier Five amps from NYC to VA for $52.00, which included full value insurance and pick-up at my home. Not bad for three 97 lb packages!

Back to supplies, another source is Bags Unlimited Inc., 7 Canal Street, Dept A, Rochester, NY 14608 (1-800-767-BAGS). Both these sources have catalogs, so request them. They also have a complete stock of supplies for CDs as well as 78's.

By the way, the above material was sourced from me for an article to be published in this magazine, but ended up printed in The Absolute Sound, When I saw it (and this might surprise some people) I was . . . pleased. I give my permission for any publication to use this information because it is important for all audio collectors to use these sources for the products they sell and for the savings they offer.

A SECRET SOURCE FOR VINYL

When it comes to revealing sources for vinyl, obscure or common, I find myself at an emotional roadblock, since I guard my sources as closely as every other record collector I know. I will only acknowledge a source when other people locate it. That's it. I have one store in particular that no one I know has found, even though I've been torturing friends about it with teasing hints for years. Yes, it is a record store. Yes, it has been a record store for 30 years plus. Yes, it still has Mercs and RCAs on the shelves (at least it did in 1991) and none of my friends or acquaintances have found it yet! The store sells 45s, 78s, and 33s—all new stock!! Actually, I can't figure out why people continue to pass it by (my one and only hint—ever).

OK, to soothe you your soul, I will tell you about a store that for me is one of the best shops I know for obscure recordings as well as some of the more

common stock. The store is called *A Classical Record*, and for the last three years has occupied a bright, lofty setting at 547 West 27th Street, Suite 680, New York, NY 10001 (212 675-8010, Fax 212 727-0495).

If you care to make the trip (during which you may run into some very friendly women on their way to working those same streets), you will encounter Albert Ten Brink and his staff. Albert has been known to music lovers in the NYC area for almost twenty years while working for Discophile, Ludus Tonalis, Academy Bookstore, and the main Barnes & Noble store at Rockefeller Center.

You know Albert is a serious connoisseur of obscura because he has an autographed picture of Carmen Amaya on the wall—serious Obscura stuff indeed. While the store specializes in classical vocal, opera, piano, and violin vinyl, it has a more than adequate selection of orchestral recordings, and perhaps the largest collection of audiophile records in any legitimate store in the New York area. There is also a large supply of many other types of recordings. The store is beautifully organized and staff knows the stock. Even though a majority of the store's business is through the mail, a visit is warmly received.

Another point to note is one that should apppeal to audiophile collectors especially, and makes this store unique: All records in the store are available to everyone who wants them—no secret stock and no special phone calls. Want lists are accepted and records are held for want list customers only when they request specific recordings. No favorites, no insiders, very democratic and fair to everyone. Refunds in cash are always in order here with no flack.

Is there a down side? Yes, and price is it, as the records in this store don't come cheap. But remember that the stock here is of exceptional quality—none of those $2 to $5 throw-aways found in most stores. Also remember that when you shop here you are choosing to bite the financial bullet (a relative experience) in order to save time and walk away with a recording that you might otherwise have been looking for till doomsday. Write for their catalogue; it contains many surprises.

OBSCURA OF THE MONTH

My first selection is one that will bring the prairie to your imagination and sounds of the range to your ears. Of course, I'm referring to that lost classic by the Ralph Hunter Choir entitled The Wild Wild West (RCA LSP 1968, produced by Bob Holland; recorded by Bob Simpson). This recording is probably one of the best of its genre—pop vocal groups for the Welk set.

This record is extraordinary in several respects: its vocal balance between the different singers, the ability of each member to stand out in the group, and (in some instances) the correct portrayal of the singers' physical size! On the other hand, the music is, well, maybe a little cornpone. OK, very corny. Like, "Oh bury me not, on the lone prairie . . . ." Ask your father—he probably knows this song. I know your father is 83 years old now, just ask him!

The soundstage is wonderful, left to right and front to back. Simpson has taken full advantage of this recording site (Webster Hall) to reproduce one of the biggest soundstage replications on record. The illusion of soloists standing full size in relation to real physical space is remarkable. In addition, there are a few instrumental solos on guitar (Erik Darling—where have I read that name before?) and harmonica (Eddie Manson) that are also perfectly reproduced in correct physical proportions.

Then there is that operatic baritone solo on "Rot Gut" by Bob Harter (stop laughing). Again, a realistically sized person beautifully captured in the magical Webster Hall. Clearly the Bolland/Simpson team should be at the top of the audiophile list

of engineers able to accurately capture ambiance and instrumental timbre; you should look for their names on LSPs when you spot them. Yes, there is life in the RCA LSP catalogue beyond Bang, Baaroom and Bob & Ray.

The second selection is a recording that truly is an audiophile-quality work. It's an organ recording that possesses true deep bass capable of shaking your room, terrific ambiance of the castle in which it was recorded, and music that is totally accessible to most listeners. Actually, almost anyone who hears it will be able to immediately sing along. Yankee Organ Music, with Richard Ellsasser at the organ of The Hammond Museum, Gloucester, Mass. (Nonesuch H-71200) is a unique organ recording because it contains variations on notable music composed by famous American composers—Ives, Chadwick, Paine, and Hewitt. Some of these composers are well recorded and represented on the original Mercury 90,000 series, but not as organ pieces. Had Mercury recorded this record, it possibly could have done it better, but I'm not sure.

Before discussing the music, I'd like to quote from the liner notes about Hammond and his castle, because the information will be of particular interest to audiophiles.

> John Hayes Hammond Jr., outstanding American inventor and pioneer in the field of electronics, died in 1965 . . . . In building his castle, Mr. Hammond sought to recreate a pre-16th century European environment in which to house the Hammond collection of medieval and classic art. An isolated spot was chosen for the huge masonry castle, free from radio and other electrical interference. The buildings were designed with galleries suitable to the art collection and with laboratories for the purpose of electronic research. Hammond was the holder of over 800 patents, many of them inventions dealing with radio and sound reproduction. He was a pioneer in such associated fields as long distance telephony, vacuum tubes, frequency modulation, and television. He devoted years to research, reading, and observation about organ tone, and designed a pipe organ for the Great Hall of the castle which he said, "could do anything a symphony orchestra of 110 pieces could do."

But this record is not merely of technical or historical interest; the music is good. James Hewitt gives us "Yankee Doodle with Variations" and "The Fourth of July (A Grand Military Sonata)." No, it's not corny! Actually it's quite musical and interesting when you consider that it was composed in the early 1800s. Wide-range swings on the organ are in evidence here, and you get a large assortment of sounds as reproduced by the Hammond organ—a feature that Hammond had especially built into this instrument.

From Charles Ives comes "Adeste Fideles in an Organ Prelude" and "Variations on America." Wonderfully done—strong bass extension for the lower pipes, and stirring sounds for the Fourth of July. Selections by Chadwick (of Mercury 90018 fame) and Knowles round out a fascinating recording of Americana by composers, all organists themselves, that should have you waiving the old Red, White, and Blue for this piece of obscura.

P.S. Try for the earliest pressings on these disks, as there is a lot of dynamic constraint in later pressings of both.

Classical

Vienna—Schoenberg, Five Pieces For Orchestra, Op. 16; Webern, Five Pieces For Orchestra, Op. 10; Berg, Three Pieces For Orchestra, Op. 6; London Symphony Orchestra; Antal Dorati, conductor; Helga Pilarczyk, soprano; Mercury Living Presence CD 432006-2

It was a year in which Gustav Mahler, after ten stormy seasons at the Vienna Opera, would board the "Kaiser Augusta Victoria" bound for New York and the Metropolitan Opera; a time when "Sezession School" would redefine visual art—particularly Gustav Klimt and his provocative *Salome*; a year that would continue to see the controversial writings of Stefan Zweig and Hugo von Hoffmannsthal. And yet, such rapid change was occurring in a city where aristocracy and tradition reigned supreme.

This was Vienna, Austria in the year 1908.

Vienna has, oftentimes reluctantly, been the home to many a great musician. It embraced Beethoven yet held Schubert and Wagner at arm's length, while letting Mozart go to a pauper's grave. It seemed only natural then, as if Nature herself had deigned it, that yet another young genius would come to fruition in this city of "cafe mit schlag" and Strauss waltzes.

In 1905 Arnold Schoenberg would virtually reinvent the concepts by which tonality, orderliness, and color are represented in music. Along with his disciples, Alban Berg and Anton Webern, the newly formed "Second Viennese School" would come to represent a new awakening in post Wagnerian Europe, the impact of which is still felt to the present day. Schoenberg developed a technique that abandoned the then prevalent "chromatic harmony" in favor of a system commonly called "atonality."

Atonality in its purest form is music without a tonal or harmonic center. Augmenting the idea of atonality, Schoenberg further reasoned that the expressive content of his music might well be better understood through the use of alternating musical color. He referred to this concept as "Klangfarbenmelodie" (tone color melody). It is these two concepts which in many ways serve as the foundation upon which much of the music of the Second Viennese School is built.

On *Vienna—Schoenberg, Webern and Berg* with Antal Dorati and the London Symphony Orchestra, we have four magnificent performances of key works vital to the Second Viennese School. Originally issued in 1962 as *Vienna: 1908-1914* (Mercury SR-90316), this compact disc reissue opens with Schoenberg's Five Pieces for Orchestra, Op. 16. Completed in 1909, the Five Pieces for Orchestra are in essence studies in musical pitch, color and intensity.

The opening movement, "Premonitions," charges ahead like some vast, relentless rhythmic machine. The sound stage captured by Mercury is enormous, with tremendous depth and vertical space above and below the brass and string sections. In the second movement, entitled "Yesteryears," there is a trio for celesta, harp and bassoon about half-way through the piece in which the recording quality is so good that the blending of the three instruments into one sonic entity is

amazing. Likewise, the brass exchanges at the midpoint of the fourth movement, "Peripetia," going from trombone to tuba and then finally into the string section permit the listener to hear a wide musical "arch" moving from one end of the soundstage to the other.

It was an urge, as Berg put it, to write "something big" that ultimately was to become the Three Pieces for Orchestra, Op. 6. Having spent the early part of his career sharpening his musical skills with song writing, Berg sought to take on the larger form of the symphony. What evolved was in fact, neither symphony nor a suite, but rather a combination of the two. Finished in 1915, the work was intended to be a gift for Arnold Schoenberg's thirtieth birthday. However, beyond this tribute to Schoenberg, the work pays homage to yet another driving force behind the Second Viennese School, Gustav Mahler. In the Three Pieces for Orchestra the adoration Berg felt for Mahler finally comes to the surface. One often hears the presence of Mahler's Sixth Symphony in these three orchestral movements, for as Berg had once written to Webern: "I don't have to tell you . . . there is but one Sixth, in spite of the 'Pastoral.'"

From the very first percussion notes of the "Preludio" the immediacy of the Living Presence sound is readily apparent. Mercury captures Berg's orchestration beautifully. In this opening movement, percussion, flute and lightly bowed strings bring to mind the rustling of leaves in some great, ominous tree. A master in combining high comedy with dead seriousness, Berg uses a waltz in the work's second movement, "Reigen" (Round Dance). There is, however, nothing dance-like about this waltz in that its appearance in a movement of such conflict gives it a "forced" impression. It is as if the waltz were being danced with a rope around its neck rather than with any gaiety or joy. The final movement, "Marsch," is pure drama. Beginning with a quick fanfare motif in the oboe, the conflict develops in a manner very much like that of Mahler's until some forty-eight measures from the end when the explosive climax or "Hohepunkt" (high point) of the movement is reached. The closing section of the movement is filled with musical sighs and whispers that almost jump out at you. The closing, final chord has dynamic weight that shakes the floor.

If Berg can be thought of as the "romantic" of the Second Viennese School, than Webern is surely its "classicist." Whereas Berg's and Schoenberg's music is expressive in nature, Webern's is economic.

Webern's Five Pieces for Orchestra, Op. 10 was written between 1911 and 1913. The work, written entirely for solo players, is scored for violin, viola, cello, and bass, flute, oboe, clarinet, horn trumpet, trombone, harmonium, celesta, mandolin, guitar, harp and percussion. These five very brief movements (the entire work is a bit over four minutes) consist entirely of musical color and dynamic intensity.

For me, Antal Dorati's performance is the highlight of this altogether wonderful recording. Webern's music is such that, often, the silences between the notes are nearly as important as the notes themselves. The detailed, spurious nature of the music was a perfect match for Mercury's three-track, minimally miked recording technique. As an example, listen to the harp passage ten measures into the first movement. The plucked notes stand in front of the listener with an immediacy and clarity that is uncanny. The echoes of the movement's final bar (with flute, trumpet and celesta) seem to place the listener in the acoustic space of Watford Town Hall, where the recording was made. The fourth movement of the Five Pieces for Orchestra may, in

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many ways, be the most fascinating of the entire work. Only six measures in length, it places the listener into a world in which the idea of a theme with development and coda occur in a period of about twenty seconds.

Vienna—Schoenberg, Webern and Berg concludes with the *Suite from Lulu*. Originally issued in 1961 as *Berg: Suites from Wozzeck and Lulu* (SR-90278), the recording features the soprano Helga Pilarczyk. For his final and, regrettably, unfinished opera, Berg chose to synthesize the texts of two plays by Frank Wedekind: *Earth Spirit* and *Pandora's Box*. "Lulu," which premiered in Zurich in 1937, is a tale or corruption and immorality. The "Prologue," which opens the opera, immediately sets the macabre tone of the work when an animal trainer likens the opera's characters to various beasts of burden. Before long Lulu is introduced, and soon we are witness to a story filled with seduction, incest, prostitution and ultimately murder.

The Mercury recording is up to the high standards we have come to expect. Dorati's performance emphasizes the long phrases and linear nature of Berg's music on a sonic canvas that is likewise broad and deep. Beginning innocently enough, the subtle mood changes of the Prologue guide the listener into a world of pathos. Berg never seems content in letting his audience simply sense the mood of his music. Rather, his motive is to pick the listener up and practically drop him right into the middle of the drama, letting him confront the madness head on. As an example of this, notice the wailing of the saxophone in the Prologue as we meet Lulu for the first time. What more evocative instrument could Berg have chosen in order to portray the decadent, ultimately doomed figure of Lulu?

The final movement of the *Suite from Lulu* is a miracle of development. It was as if Berg had, in one grand gesture, combined the passion of the late romantics with the ordered logic of atonality. The final soaring adagio is highly reminiscent of Mahler—in particular, the lyrical adagios found in the Ninth and Tenth Symphonies. Berg's emotionally charged music ebbs and flows like the calculated movement of the tides. Over a motive in the clarinet, viola and cello (g–f#–f) the adagio degenerates into a scene of almost endless pathos. For me the mood painting conjures up the final lyrics of "Lulu's Song": "I have never in this world pretended to be anything other than what I was taken for. And nobody has even taken me for anything other than what I am."

At long last, a shriek—Lulu is gone and with her, her tale of tragedy and gloom.

George Mardinly

And a Conversation with Wilma Cozart Fine

During late May and early June of this year I had the rare opportunity to talk to Wilma Cozart Fine, Recording Director for the "Living Presence" reissue project. Mrs. Fine and her husband, the late C. Robert Fine, were responsible for the original Mercury "Living Presence" recordings. Wilma spoke glowingly about such recordings as the Paul Paray/Chabrier disc; the Mor-

ton Gould Fall River Legend disc and the Howard Hanson/Charles Ives recording. She then noted that one of her longtime favorites had been the Vienna disc now under review. As Wilma noted:

> There was tremendous enthusiasm on the part of Antal Dorati and the entire 'Living Presence' team when planning and making this recording. We always prided ourselves on the fact that in addition to the traditional repertoire we were able to make so many 'first' recordings (i.e., the Eastman series, works commissioned by Dorati and the Minneapolis Symphony) and of so many brand new compositions which were in fact receiving first performances as well. This same pride and enthusiasm was brought to the Vienna—1908-1914 project.
>
> The spirit of the event, the recording session, was positively electric. It was a musical/technical environment in which everybody (the artists, technical crew, stagehands, etc.) were caught up in the excitement of the music and performance.

Likewise, today Mrs. Fine is in charge of the entire reissue project, and in addition to all technical and musical matters related to the Living Presence sound, also oversees the meticulous historical notes, technical notes, cover artwork and of course the selection of repertoire.

> In coming back to the Living Presence series my enthusiasm for the project today is precisely as it was back in the years from 1950 to 1963—the music is inspiring.

What is it that makes the Living Presence sound so intriguing? As Mrs. Fine put it:

> The Living Presence sound draws you in, you participate. You do not listen to a Mercury Tchaikovsky 5th Symphony in quite the same way as you listen to another Tchaikovsky 5th. At Mercury we always thought of both the placement and the position of the listener in relation to the performance. Microphones were left in their original recording position so that the listener's perspective remained the same throughout the entire performance. You must understand, a classical performance *happens*, it occurs in a *place*, a particular acoustic space. The intent of Mercury Living Presence was to put the listener into that acoustic space.

I pointed out to Wilma that oftentimes the practice of listening to the Living Presence recordings with the lights off seemed to heighten the sound experience of the recording. Wilma commented:

> Yes, yes I know exactly what you mean. As a matter of fact, in the A & R room, when we were making the original recordings, I could not and did not want to see the performing musicians. When you listen to a recording you cannot see the performers. I only want to know what I hear.

Clearly, close attention to detail, superb artists and diverse repertoire have turned the Mercury Living Presence recordings into an artistic event that will continue to receive admiration in the years to come. As Mrs. Fine so astutely put it:

> There is no known substitute for the human ear. It is, quite simply, the bottom line. It's all in how you hear. A great recording starts and finishes in the human ear.

Ballet Music For Paris By Verdi, Rossini And Donizetti

Al Simon

Cultural institutions have long been heavily dependent upon wealthy benefactors for financial viability, and the Paris Opera of the nineteenth century was no exception. Many of these patrons included gentlemen, usually members of the exclusive Jockey Club, who would request the insertion of a ballet divertissement as reward for their contributions (who knows, perhaps this would be the night that a man might select his new mistress). Since it was customary for Jockey Club members to arrive at the opera well into the performance (they had to have a leisurely supper first), it was deemed most appropriate for the ballet to be inserted at the beginning of the third act, regardless of its relevance to the libretto at this point.

Adherence to the mandated ballet often posed problems for composers, who felt subjected to a rather unnecessary vagary that many times had a negative impact upon the flow of the opera. Often hastily written and rather nondescript, a large portion of these ballet interludes no longer are performed. Wagner partially circumvented the dance requirement by inserting his famous Tannhauser "Venusberg" ballet music directly after the Overture, causing quite a furor from Jockey Club members who were deprived of seeing their favorite dancers.

Verdi took the ballet mandate quite seriously once he attributed the Paris "failure" of Louisa Miller, after only eight performances, to omitting the required ballet. Others created miniature masterpieces which have stood the test of time and continue as repertory staples in several world class ballet companies.

Antonio De Almeida, the son of Portuguese and American parents, abandoned early studies in the physical sciences for a musical career which led to various conducting positions in both the operatic and symphonic fields. In the mid-to-late 1970's, he recorded three albums for Philips which purport to contain the complete ballet music that Verdi, Rossini and Donizetti wrote for the Paris productions of their operas. For the most part, the music on these releases is first rate and has, over the years, provided continued enjoyment to this listener.

Verdi: *Complete Ballet Music For Paris;* Antonio de Almeida, National Opera Orchestra of Monte Carlo and London Symphony Orchestra. Philips 6998 012 (two records).

This is a sensational recording containing some of the most melodic music Verdi ever wrote. Obviously, he lavished great care on these compositions, and I feel aurally transported to the ballet stage. This should not come as any great surprise, since the music from I Vespri Siciliano (The Four Seasons Ballet), and Don Carlos (Il Ballo Della Regina), have been choreographed by Jerome Robbins and George Balanchine respectively for the New York City Ballet, and remain in the repertory today. Music from I Lombardi, while less familiar to this listener, is exceptionally brilliant and also reveals Verdi at his best. Divertissements from Il Travatore, Othello, and Macbeth round out the remaining selections.

De Almeida's interpretation of these scores is superb—completely lyrical throughout, tempi precisely defined a la Dorati, and with plenty of foot taping bravura in the faster passages. Climaxes are stunning and hair raising. Playing by both orchestras also is excellent. The Philips' sound is full bodied and natural, and although your seat is mid-orchestra, soundstaging in all planes is more than adequate. This is an absolute "must have" recording for ballet music lovers, in my opinion—well worth the search for this treasure.

Rossini: *The Ballet Music*, Antonio de Almeida, National Opera Orchestra of Monte Carlo. Philips 6780 027 (two records).

Most ballet aficionados are familiar with *La Boutique Fantasque*, perhaps less so with *Soiree Musicale* and *Con Amore*. However, for the most part, these works were arranged and choreographed to music not specifically written by Rossini for this medium. On the other hand, he also adhered to the obligatory ballet requirement for his operatic productions in Paris, and we are the richer for it. Included here are divertissements from the operas *The Siege of Calais*, *Moses*, *William Tell* and *Othello*, the latter expressly for the 1844 Paris revival and based upon music from other operas.

The music from *William Tell* is most familiar to me since it was included by the New York City Ballet in their mid-1970's commemorative tribute to August Bournville, the great nineteenth century choreographer and founder of the Royal Danish ballet, in whose repertory the ballet remains. As did Verdi, Rossini exercised great care in these compositions, and each is decidedly different—a reflection of the varying librettos. All are typical Rossini, comprising a wealth of melodic material, the inherent Rossini sparkle, and of course his quite famous graduated crescendos concluding the faster sections.

De Almeida brings verve and excitement to this recording, never dull or plodding, and with toe tapping finales consistent with the score: Listen to the breathless ending in *William Tell*. Soundwise, the recording is excellent, similar in all perspectives to the Verdi release—another item to be included in your weekend record searches.

Donizetti: *Ballet Music*; Antonio de Almeida, Philharmonia Orchestra. Philips 9500 673.

Despite repeated hearings, I find this music to be the least exciting of the de Almeida trilogy. There is little bravura writing here; the music is generally slow paced and, while this may be reflective of the librettos, there are few sections which contain inspiring melodic content, at least to this listener (after that statement, bar the doors and windows, the Donizetti lovers will be after my head).

The recording includes the ballet music for the Paris productions of *La Favorite*, *Les Martyrs* and *Don Sebastien*. The final selection is from *The Siege of Calais*, an opera composed for Naples, which had a relatively short lived existence. Of the four ballets, only *Don Sebastien* conjures up any degree of excitement. In fact it is quite melodic and fast paced, and remains a staple of the New York City Ballet repertory entitled *Donizetti Variations*.

Once again, De Almeida conducts with competence, the orchestra plays beautifully, and the Philips sound is quite natural and well balanced. Look for this single disc recording if only

for the *Don Sebastien* music, and to complete the trilogy.

P.S. Philips has just released the CD version of the Verdi *Paris* with no appreciable loss of musicality from the original analog LP pressing. Perhaps Philips will get around to releasing the Rossini and Donizetti in the near future.

Serge Prokofiev's Cinderella Ballet (Complete)

Al Simon

My first experience with this ballet occurred at the Metropolitan Opera House in the early 1960's when the impresario Sol Hurok brought over the Royal Ballet of Covent Garden, London. I was immediately enchanted with the choreography, dancers and staging, but what left a lasting impression was the magnificent music, which today sounds as fresh and new to this listener as it did thirty years ago.

Not even various restagings of the work, (e.g., the Rudolph Nureyev, Paris Opera Ballet version, which transposed the storyline from that of a Russian fairy tale to a pseudo imaginary Hollywood setting in the early 1930's), can visually distract from this utterly charming and inventive score. In anticipation of the proverbial question, I do not intend to analyze or compare the relative merits of this music with Prokofiev's equally or perhaps more famous Romeo and Juliet Ballet in this review, so different are the storylines and attendant musical requirements.

Commissioned by the Kirov Ballet in Leningrad, composition began in 1940, but work was interrupted by World War II, and the premiere did not take place until November 1945—not by the Kirov but by the Bolshoi Ballet in Moscow (the Kirov version was introduced five months later). The initial performance met with unanimous acclaim and is today widely performed by many world class ballet companies in variant stagings.

Regardless of the choreographer's conception of a period or location, most versions are faithful to the storyline of the original fairy tale. Act I shows the stepmother and her two daughters preparing for the grand ball, then Cinderella alone fantasizing as if she were attending the festivities, and finally her transformation as a princess swept away by coach to the castle.

Act II is the famous ballroom scene with beautifully costumed guests from the world over. Cinderella arrives, bedazzles all, enchants the Prince and the act concludes with her frenzied exit as midnight strikes. Act III begins with the Prince's worldwide search for the girl with the missing slipper (during which several national character dances are performed), and concludes with the reunited lovers performing a beautiful and expansive pas-de-deux.

While the stepdaughters are indeed selfish individuals, they are usually portrayed as extremely comical characters. Their attempt to learn court manners and take dance lessons in Act I, plus the utter fiasco when each dances with the Prince in Act II, is ab-

solutely hilarious. The music is completely consistent with these charades. Sometimes danced by two men as in the Royal Ballet version I saw, the resultant effect can steal the show.

Each of the principal characters is represented by very individualistic thematic material. Cinderella is portrayed at first as the mistreated stepdaughter, second as a person of purity and day-dreams, and finally as one who realizes love and happiness. The scoring for the timid father, the nagging stepmother, the Prince, and the self-centered sisters (who have rather limited social graces) all provide a recognizable identity of their respective personalities to the listener. Prokofiev paid homage to Tchaikovsky by writing a score in the tradition of classical ballet. The music is always danceable and provides the requisite atmosphere, charm, and tension characteristic of the latter's three great ballets.

Highlights are too numerous to mention, but many music systems will be taxed to the limit by the highly dramatic, discordant music when the tower clock chimes at midnight and Cinderella rushes from the ballroom. Also of note are several beautiful waltzes, a number of adagios for Cinderella, national and fairy tale character dances, and an extended pas-de-deux for the lovers prior to the final curtain. The listener also will recognize the famous March from Prokofiev's The Love For Three Oranges in Act II.

The Vladimir Ashkenazy (Cleveland Orchestra, London CD 410 162-2) performance is magnificent. He captures the varying moods of the story and each principal character perfectly,

and is accompanied step-by-step by marvelous playing from the Cleveland organization. Soundwise, this CD recording (vintage 1983) is really superb, and extremely dynamic. While there is some degree of violin digitalitis, the cellos, bass, woodwinds, and brass sound relatively natural.

The percussion section is very clear and articulate. However, one disconcerting element is the recording of the bass drum. While drum rolls are extremely deep and impressive, there are many occasions when the score calls for the kettledrum to be sharply struck for maximum impact. At times, the engineers have recorded the sound out of proportion (too high a level), a là some Telarc recordings, and I would be somewhat conservative with the volume control upon initial listening to avoid possible speaker damage. Soundstaging in all planes is excellent. Overall, an excellent performance, well recorded (with a few exceptions) and definitely worth the price of the double CD set.

Gennady Rozhdestvensky (Moscow Radio Symphony Orchestra, Melodiya RB-4102) also conjures up a highly imaginative reading, at least the equal of Ashkenazy, in this 1967 release. His interpretation of the frenzied midnight scene is absolutely hair-raising. The Melodiya recording could be warmer sounding, the lower frequencies more powerful, and there are occasional exaggerated highs, but soundstaging is excellent. Overall, the deficiencies are more than offset by the performance, and it's my first choice for those who remain undying advocates of the analog format.

The 1983 Andre Previn (London Symphony Orchestra, Angel SC-3802) recording was digital, but released in LP format (there also may have been a CD version). His interpretation is consistent with the more dramatic aspects of the ballet, but the comical qualities of the score could have been more imaginatively expressed. This is unfortunate, since the recording has been well engineered, with a warm, relatively natural sound. Note: Both of the latter two recordings, while deleted, do not appear too difficult to find in used record stores.

For those preferring an abbreviated version, Robert Irving, the late musical director of the New York City Ballet, conducts the Royal Philharmonic Orchestra (Angel S-35529) in nearly all the music from Acts I and II (no Act III). The recording couples perceptive insight into the score with excellent sound. For CD advocates, excerpts from the ballet recorded by Jarvi, Scottish National Orchestra (Chandos 8511) and Slatkin, Saint Louis Symphony (RCA RCD1-5321) are currently available. I have not heard either recording, but these are fine conductors with good orchestras.

Note: In this regard, Digital Upgrade in Chappaqua, New York provides listening stations for perspective purchasers to hear CD's. Perhaps there are stores with similar facilities in your area.

If you think I am touting this ballet music, you are right. Give it a try; it's quite a musical and sonic delight.

Brazilian Adventure With Gal Costa

Bill Steward

I had just returned to Manaus, after two months on the upper Amazon, when I visited my first Brazilian record shop. Life on the river was exciting, but I craved the familiar smell of vinyl. Although Colonel Waltberger treated me well on the Colombian frontier, and the Peruvian Captain did accept my apologies as I wandered without papers into his country early one Sunday, and we did manage to find the eighteen barrels of fuel for our return down river, it had been unnerving. A record shop was home turf—safe.

I wavered between the purchase of the Beatles' *Revolver*—true security—or *India* by Gal Costa (Philips 6349077). The cover photo of her wee tanga [thong] exposed by the dropping grass skirt, and the back jacket picture of red and black Ormosia seed necklaces providing the hint of a blouse, spoke to me of why I came to this country. Adventure! Eighteen year old blood won. I'm glad. The disk is still a winner.

It's hard to describe India's effect on the Brazilian interior—from young couples in the plaza listening silently to the title cut, a sad love song, to the good-natured craziness of corn-flavored ice cream inspired by "Milho Verde," an avant-garde rhythm experiment that worked. (So did the ice cream!) I learned to understand the quick smiles and dropped eyes when I questioned her skating around the obscenity laws. I also learned the meaning of "saudade," the ardent nostalgia shared in a bar in Cruzeiro do Sul while we played her version of "Desafinado," a classic.

That was 1973, the middle of Brazil's military dictatorships. Gal was, by then, well established, and she sang the music of the young Brazilian composers who remained overseas during this period. She mixed European, North and South American musical forms, and presented selections in an accessible form for Brazil's varied culture. One measure of her influence was the music heard at night in the road-cutting camps of the Trans-Amazon highways. Toward the middle of the decade, the latest releases from France and Germany were played. The accessibility of her songs reaches north of the Tropic of Cancer, too. It's great when friends now drop by with their recent discoveries, like early-this-century sambas.

Gal also resurrected great songs from the '30s through the '50s in Brazil. Her *Aquarela do Brasil*, (Polygram 836 017-2) released in 1980, provides a glimpse of the phenomenal talent during several decades of the composer, Ari Barroso. The title song is familiar to most everyone. It evolved into "Brazil." Yes! The very song harmonized by the Dinning Sisters during W.W. II and, again, used for the soundtrack in the movie of the same name. The songs on the disk are all captivating. Too often, I play this while intending to chore around the house. However, I'm stopped. Thank heaven its length was limited by vinyl, and forty minutes later I'm able to cover for my lapse.

In 1984 Gal released *Profana* (RCA 103 0637), which was featured for some time at New York's Tower Records. The album is a joy in its range of topics and music styles. It

statesharshrealitywithBrazilianPop in "Vaca Profana," gives an exasperated laugh at the Kremlin in "Topázio," and produces Carnival excitement in "Cabeça Feita" and "Tillilingo." My wife likes "Tem Pouca Diferença" (There's Little Difference), a fun polka about the sexes and the "big oops!" of Adam and Eve.

Her recent album, *Plural* (RCA 2214-2-RL), will inhabit a dust-free place on your shelf. Like most of her collections, there is something for everyone. *Plural* has several delightful segues to Brazil's rich world of music. Cole Porter's "Begin the Beguine" and Rodgers & Hart's "I Didn't Know What Time It Was" are two rare songs where Gal sings in English. For those of us who joined the Perot-like rush to buy Paul Simon's *Rhythm of the Saints* with great expectations, Gal Costa delivers unrestrained Brazilian percussion in "Salvador Não Inerte," which she performs with Caetano Veloso. The apparent ease with which the musicians create the complex yet loose rhythm, will either raise goosebumps in amazement or leave you slack-jawed in awe. Brace your neighbors when you find this disk.

Through her prolific decades, Gal's voice remains an easy pleasure. It is youthful, clear, and under her control. You don't need to understand Portuguese to appreciate her songs. Her articulation and timing make the vocals "right," even if the words are nonsense to your ears. I love the Brazilian repertoire for pronouncing the letter *R*: from a trill, to a slight tongue tap behind the teeth, to a solid *R*, to a soft *H*, to a deep guttural breath. Gal uses each without sounding forced or contrived. Hers is the great accent of her home, Salvador, Bahia.

Gal's love for her art is abundant in her work and her understanding is illustrated by consistently well crafted music with gifted musicians. The spectrum is filled without abusing any part. Since the 60s, she uses electronics without succumbing to noises that become cliches for an era. A bass guitar often provides a dynamic beat. Brazilian rhythms slide in easily. Harmonics force you forward. Wood blocks dance clearly in the background. Small triangles, bells, brass & strings, guitars, organs, and Brazil's deep reservoir of percussion instruments are all tapped to create cuts that remain interesting for years.

Generally, the sonics of her disks during the Philips-Polygram-Verve years before the early 80s are a bit veiled. Initially, you sense a lack of richness. Yet, the music is there and the fullness of the instrumentation carries the day. After she went to RCA-BMG, there is a happily noticeable improvement to a sink-your-teeth-into sound. With a couple of exceptions, the temptation was avoided to flood the high frequencies for the benefit of, how do I say it?—non-reference systems. The vocals are a tad processed but not annoyingly. Where were the Chesky brothers 20 years ago?

A few caveats . . . Hold off on initial purchases of Gal's albums from the 60s. To be gracious, they have a lot of energy but also the feel of "I guess you had to be there." The "Best of" disk, *Meu Nome e Gal* (Verve 836 841-2) contains several cuts from this period and its excessive high frequencies should push its purchase off a few months. A much better bet for "Best of" is *O Melhor de Gal Costa* (RCA 3150-2-RL).

Cross the threshold at your record store and browse the Brazilian section. Ask for Gal Costa. You'll either get a knowing grin or that all too familiar blank stare. Her albums often state just Gal and the writing of *Plural* is downright cryptic. Search. It's worth the effort to have Gal Costa provide an introduction to the unbelievably diverse world of Brazilian music. Centu-

ries have gone into creating Brazil's culture, and Gal provides a pleasant peek.

Patricia Barber, *A Distortion of Love*
Barber, piano, vocals; Wolfgang Muthspiel, guitar; Marc Johnson, bass; Adam Nussbaum, drums. Jim Anderson, recording engineer. Antilles 314-512 235-2

We've got a real artist here. An artist who hears things differently and translates what she hears into music via her arrangements, playing and singing. This is her second recording; if the promos are to be believed, her first record had to be made on her own label to avoid compromising her art to commercial considerations.

The recording is a mix of vocals and piano played in a modern jazz/cafe style with guitar and rhythm backup. Soloing is effective all around, with each member contributing to a highly atmospheric recording. It's moody jazz with content and intelligence—but the music moves beyond mere mood to mystery, pale unreality, and tension.

On the first cut, "Summertime," the piano and bass lay down a menacing, repetitive motif reminiscent of the alien theme from *They Live*, over which Barber vocalizes the way sirens must have while luring sailors to their deaths. Johnson plums the lower reaches of his instrument in a way that should make this an audiophile classic. It will take good control of the bass regions from your system to cleanly deliver these lines. Finally, Barber returns to sing the lyric in a way you've not heard before on this ripe old standard. The disjuncture between arrangement and lyric is quite jarring, but very involving and atmospheric.

The general level of performance remains as high throughout the recording. "You Stepped Out Of A Dream," another standard, is again well thought out, and delivered in individualistic fashion. There are no gimmicks here. Muthspiel solos effectively, as does Barber on piano, building and releasing tension, adding to, instead of detracting from, Barber's perspective on the lyrics.

"Parts Parallels" and "Or Not To Be" are instrumentals delivered with taste and forethought. They again achieve an original sound and perspective. This consistent uniqueness makes me believe Barber truly looks for inspiration, and eschews recording for its own sake. Only "Subway Station #5" shows commercial compromise, which I feel is traceable to its fusion roots. I freely admit antipathy to fusion and its formula rhythms, yet even here, Barber develops it, takes it somewhere, and by the end I found my feelings mollified.

A well-seasoned cafe performer who has made Chicago's Gold Star Sardine Bar her base of operations, Barber is a self contained artist. She doesn't try to throw everything at you and say "look at me." She holds something in reserve so the music can develop on its own, and the listener doesn't have to compensate for her ego. Emotional feel is honest, not showbiz. When it's called for it's there.

Antilles had done an excellent job on this recording. Balance and placement of musicians on the stage are natural, with good depth and width. Johnson's bass sounds nice and tight and deep, with an appropriate, not over recorded, level. The treble range is delicate, never bright. Zildjian cymbals sound the way I remember them: with the harmonics presented as feathery, each vibration separate from the rest, without sizzle. The only teensy criticism I have is some sibilance added to

Barber's voice on "You Stepped Out Of A Dream," probably due to close miking. This release and others I've heard from Antilles make me feel much better about the sonic standards set by a commercial label—and they are putting out some very good stuff artistically. Congratulations to engineer Jim Anderson. Buy this one for the performance. Buy it for the sound.

Russell Novak

Cecil Taylor, *Jazz Advance*
Cecil Taylor, piano; Steve Lacy, soprano saxophone; Buell Neidlinger, bass; Dennis Charles, drums. Producer: Tom Wilson (original release), Michael Cuscuna (reissue). Digital transfer: Malcolm Addey. Blue Note CDP 7 84462-2

Even now, after more than three decades of periodically experiencing the totally uncompromising, iconoclastic and non-commercial vision of Cecil Taylor, one can still be astonished by the sounds emanating from this 1956 recording. Those familiar with his post '60s work may feel, as I do, that his phenomenal, unflagging technique readily lends itself to self indulgence, imposing merciless demands on each witness to a performance—the initiated as well as the newcomer. However, this initial, pre-stereo recording affords the receptive listener a welcome opportunity to experience the excitement that attends the realization of budding genius at work.

That this session is devoid of the marathon excesses inherent in his current work is not to say that this music isn't challenging. Grasping the flow of Cecil's ideas—the ready use of atonality and oblique chordal intervals, particularly on the pop standards of this set ("You'd Be So Nice To Come Home To" and "Sweet and Lovely")—can be a daunting experience. Indeed, its 36 year presence on the jazz landscape notwithstanding, time has not eviscerated the fundamentally heretical ideas inherent in Taylor's application of jagged structure and continual kneading of the piano keyboard.

Ultimately, however, this music is anchored, and it satisfies not only intellectually but in a most fundamental, emotional manner. The trio original, "Rick Kick Shaw," kicks ass as well as any Bud Powell, McCoy Tyner uptempo cooker you could find. Additionally, the presence of Steve Lacy on two tracks (both Cecil originals) is of interest in that it marks the first of this soprano saxophonist's many forays into previously untested jazz waters.

For what it's worth to those who might still fear to tread, most modern jazz enthusiasts consider this album essential—its first LP incarnation on the short-lived Transition label having become a valuable collector's item. Consequently, the reproduction of the original abstract cover art for this CD release (although the Transition LP's liner notes have been abandoned in favor of an abridged version of Nat Hentoff's notes to the 1975 Blue Note reissue) adds to the enjoyment of this unique recording. Get it.

Marty Milgrim

Charlie Haden & The Liberation Music Orchestra, *Dream Keeper* Charlie Haden, bass; Carla Bley, arrangements; Dewey Redman, tenor sax; Tom Harrell, trumpet; Branford Marsalis, tenor; Ken McIntyre, alto; Sharon Freeman, french horn; Ray Anderson, trombone; Paul Motian, drums; and more. Producer: Hans Wendl. Engineer: Neill King. Blue Note CDP 954742

A bassist who is instantly recognizable by virtue of his ferociously taut sound, Haden has always shown a willingness to participate in a variety of musically valid ventures. One of the original members of the ground breaking Ornette Coleman quartet of the late 1950s, Haden has subsequently been involved in literally hundreds of diverse settings. In the late '60s alone, these appearances ranged from the mainstream sounds of a combo co-led by swing masters Pee Wee Russell and Henry Red Allen, to the structured avant garde frenzy that was a hallmark of the short-lived Jazz Composers Orchestra Association. No matter the forum, one is guaranteed of an absence of fluff in any musical undertaking in which he is involved.

Haden also has an acute awareness of this century's various racial and social injustices as they have occurred throughout the world, periodically using them as raw material for poignant musical expression on a grand scale. *Dream Keeper*—its title is derived from an early collection of Langston Hughes poems—owes its creation as well to Carla Bley, whom Haden credits as the only person he has ever trusted to arrange the music for the L.M.O. Her empathetic talents are showcased on the title piece, which she also composed.

Incorporating words from Hughes' plaintive poem "As I Grew Older," in addition to traditional themes from El Salvador, Venezuela and the Spanish Civil War, this ambitious suite effectively melds passionate and expressive solos within a solid ensemble foundation. The Oakland Youth Chorus and the work of Juan Lazzaro Mendolas (pan pipes and wood flutes) also enhance the sonic colors on this passionate piece. Throughout this wonderful album, Haden's bass provides eloquent backdrop to a number of strong contributions from, among others, Dewey Redman (listen especially to his exciting tenor sax work on the South African theme "Nkosi Sikeleli Afrika") and Tom Harrell (trumpet).

Some 20 plus years after The Liberation Music Orchestras debuted on the Impulse label, *Dream Keeper* marks only their third recording (the second, *Ballad Of The Fallen*, was recorded for the German-based ECM label in 1982). In contrast to the initial album's angry, often chaotic underpinnings, this latest L.M.O. offering is marked by a more accessible and convincing overall structure. Common to these works, however, is a sense of solidarity and commitment that is woven within each of the three ambitious musical tapestries. Any collection of modern music would be richer with all three of them.

Marty Milgrim

Malachi Thompson, *The Jaz Life*
Malachi Thompson, trumpet; Carter Jefferson, tenor; Joe Ford, alto and soprano; Kirk Brown, piano; Harrison Bankhead, bass; Nasar Abadey, drums; Richard Lawrence, congas. Producer: Robert G. Koester. Recording engineer: Paul Serrano. DelmarkDD-453

Thompson uses the term "jaz" to distinguish his music from what the casual or even committed listener recognizes as jazz, which he describes as "imitative, redundant and monotonous." Oh really? Such lofty pretensions aside, *The Jaz Life* is a recording well fortified with the creative and vital impulses inherent in all good jaz(z), despite its overall derivative feeling. Nothing here will astonish you, much less make you pause in the midst of your Sunday morning bagel, but there are moments in this recording that will provide pleasure to the attentive listener. Case in point: the ensemble riffing of Coltrane's "Cousin Mary" theme in Thompson's tribute opening piece, "In Walked John."

With trumpet playing evocative of a thinner toned Woody Shaw, Thompson's sincerity and love for the hard bop idiom are readily apparent. He is ably assisted on the front line by the reeds of Carter Jefferson (tenor sax) and Joe Ford (alto and soprano), veterans of previous associations with Art Blakey and Elvin Jones respectively. Jefferson in particular provides some heartily gruff, Trane-inspired moments—"My Romance," for example, the sole ballad in this session.

Other enjoyable interludes are provided by the stoptimes employed in the Ray Charles gospel-flavored piece, "Drown in My Own Tears," and the quirky, infectious line of the second tribute original, "Mystic Trumpet Man" (for Miles Davis). Nice also to again hear Billy Harper's "Croquet Ballet," a piece I recall having periodically heard back in the '70s by this unheralded tenor. Finally, the simple modal theme of another Thompson original, "Lucky Seven," affords everyone the opportunity to release significant pent-up energies, with Kirk Brown's Tynerish piano especially discernible within the largely unknown, Chicago-based rhythm section. Solid overall, if not essential.

Marty Milgrim

Helen Merrill, *Clear Out Of This World*
Merrill, vocals; Roger Kellaway, piano; Red Mitchell, bass; Terry Clarke, drums; Tom Harrell, trumpet and Wayne Shorter, soprano and tenor sax featured on selected cuts. Brian Scheuble, recording engineer. Antilles 314 512 654-2

This is a fine recording of a classic jazz vocalist who began recording in 1953 with Earl "Fatha" Hines and has retained her powers of delivery through the 62nd year of her life. It's good to hear Merrill again, and I'm glad to see her back with a major label. Recording for Mercury Emarcy in the fifties, Merrill was well known in the jazz world, although she never attained the popularity of Ella, Sarah Vaughan, or June Christy. She was and is, nevertheless, one of the best.

As pop/jazz singing died in the sixties and the mongrel hordes took over the record labels, Merrill, like many other jazz vocal artists, found it more and more difficult to record. She became active mainly in Europe and Japan (where she settled in 1967, and where they could apparently tell the difference between pelvic gyrations and talent), recording a series of excellent

albums that were occasionally available as imports.

Something Special (1978, Inner City 1060 and Trio PAP-9057), *Autumn Love* (1977, Catalyst CAT-7912, Japanese Victor number unknown), and *Helen Sings, Teddy Swings* with Teddy Wilson (1970, JVC Nivico SMJX-1011) are worth searching for on vinyl. Merrill has a breathy voice of somewhat limited range and a comparatively inflectionless delivery compared to most singers. She is, however, searching and melancholic in exploring lyrics, giving the feeling that the song structure is open-ended—which of course it is not. Think Cool, think Peter Gunn at Mother's, think sad ballads and you've got it.

The accompaniment on this date is very sympathetic and involved; I don't get the feeling they're just going through the motions. Tom Harrell plays pretty on "When I Grow Too Old To Dream," and the rhythm section is consistently careful not to step on her. "Some Of These Days" is an interesting duo between Merrill and classic bass player Red Mitchell, who also scats in harmony with his instrument. Roger Kellaway can be found on dozens of recording dates and has never achieved the recognition he deserves. His playing is very tasteful and sensitive, and there are several lyrical solos here. Merrill has given enough room for each musician to stretch out, and that approach pays dividends because it keeps them more involved. There is enough variety in instrumentation and mood from track to track to keep things interesting.

The recording is tastefully multi-miked and manages to give the impression of a cafe environment. Her voice is the right size, located at the rear center of the stage, the drums and cymbals appear at the same spot (many multi-miked jobs scatter the percussion set all over the stage as though the drummer's set was 15 feet wide), and the other instruments are recorded with proper levels. Some reverb is added to Merrill's voice, which unfortunately also serves to emphasize some sibilance (she has always used this gimmick), but otherwise the sound is completely natural. A good job. Thanks to Antilles for being adventurous with two jazz singers.

Russell Novak

John Coltrane: *First Meditations (for quartet)*
Coltrane, tenor; McCoy Tyner, piano; Jimmy Garrison, bass; Elvin Jones, drums; 1965. Impulse (GRP) GRD-118

John Coltrane: *The Major Works of John Coltrane*
Personnel listed above on all tracks, plus Pharoah Sanders and Archie Shepp, tenor; John Tchicai and Marion Brown, alto; Donald Garrett, bass clarinet; Freddie Hubbard & Dewey Johnson, trumpets; and others on selected tracks; 1965. Impulse (GRP) GRD-2-113

Albert Ayler: *Love Cry*
Ayler, alto & tenor; Don Ayler, trumpet; Call Cobbs, harpsichord; Alan Silva, bass; Milford Graves, drums; 1968. Impulse (GRP) GRD-108

Keith Jarrett: *Silence*
Jarrett, piano; Dewey Redman, tenor; Charlie Haden, bass; Paul Motian, drums; 1977. Impulse (GRP) GRD-117

GRP is to be congratulated for acquiring and making available the Impulse catalog to a new generation of music lovers. This reissue series is produced by Michael Cuscuna, an acknowledged jazz expert and historian, and features the original cover art and bonus tracks from the same recording sessions where applicable. Impulse Records exerted a profound influence on the jazz record buying public in the '60s & '70s with a stable of avant garde and traditional artists and artistically high standards. New releases were eagerly awaited.

Impulse, like most jazz record labels, recorded with multi-mike techniques. While these recordings fail to generate a three dimensional soundstage in the way that minimally miked classical recordings do, the instruments themselves were well recorded, although not always as carefully mixed. Generally speaking, the larger the group, the more mikes used, the less dimensional the sound. Fortunately, except for *The Major Works of John Coltrane*, these are small groups. The digital transfers are good and you can hear added clarity of detail in texturally thick passages. Impulse recordings were not always the last word in transparency—just OK—but it's the music we're interested in!

First Meditations (for quartet) was recorded two months prior to the version released to the public on Impulse A-9110, entitled *Meditations*. That re-

cording added Pharoah Sanders and a second drummer, Rashied Ali, to the mix. The added personnel gave the music a much thicker texture. The styles of the players were more experimental, less compatible to my ears, less accessible. The quartet version featured here was one of the last recordings by Coltrane's classic quartet on its own. It forms a bridge between the incantatory style of *A Love Supreme* and the later, less structured, more frenetic recordings with the added personnel. Coltrane was growing again, experimenting, and by January 1966 the quartet had disbanded. What we hear is the classic quartet sound at its peak. We also hear a forecast of Coltrane in his final incarnation as an artist.

Coltrane was concerned with expressing, in spiritual music, no less than the underlying force for *unity* in all creation. It is interesting to hear Coltrane use all the experimental tools at his command to express this while the rhythm section keeps him grounded on planet Earth. Trouble following Coltrane? Listen to McCoy Tyner play the chords on piano and you won't get lost. In fact, it is the contrast between the rhythm section and the tenor solos that gives value and perspective to the music. *First Meditations* is "better" music than *Meditations* in that, because of fewer personnel and better integration of playing, the compositions are heard more as compositions, the spiritual force better defined.

The Major Works of John Coltrane is an anthology of extended compositions from that very productive year of 1965. "Ascension (I & II)," "Om," "Kulu Se Mama" and "Selflessness" all feature personnel added to the basic quartet, and free improvisation with all the musicians blowing a lot of the time. This is where Coltrane began (but never completely succeeded) in losing me. The compositions are less compositions than a quest for *unity*, not of organization but of feeling. Sometimes it works and sometimes it doesn't. "Kulu Se Mama" works best for me with an extended Tyner solo over exotic percussion toward the end of the cut. These performances exhibit high energy and tension. If you can psychologically accept a musical approximation of physical energy as a positive value in music, you will be way ahead of the game with these recordings. The mind first rebels from, then relaxes into the music, especially the less densely played portions.

Spirituality again infuses the proceedings. The irony is that while the music is freely improvised, the motivation is really for a new order. With the country at war and in social strife, art and music searched for a fundamental need of human beings: peace.

On Love Cry, recorded five weeks after John Coltrane's death, Albert Ayler became one of two tenor players to take on the mantle of the dead hero (Pharoah Sanders being the other). Ayler has a tone similar to Coltrane, sonorous and bold, but I sense wry humor in the repeated figures and filigree work in his solos.

His themes are very simple. "Zion Hill" and "Universal Indians" are cases in which a simple theme is repeated over and over while being explored. He tried to capture the feeling of folk melodies; his solos departed from and returned to that point in the development of the melody. Harmonies took on strange aspects because he was less concerned with harmonic structure. His wide vibrato gave an uncontrolled feeling to the music, and the strange instrumentation and vocal wailing heard on some tracks furthered that feeling.

The percussion and harpsichord on "Zion Hill" form the forest floor over which Albert and his brother Don dance in a primal and quixotic way. Ayler was also trying for spiritual

unity, but I hear his playing as much more motivated by human feelings, less cosmic in nature. Ayler was a little known avant garde artist whom I can recommend highly to those with an ear for the music.

Keith Jarrett began playing with the avant garde in the late sixties, but by the time the *Silence* session was recorded in 1977 (the end of his contract with Impulse) these players had retrenched and were playing jazz within a new, expanded harmonic structure. Those familiar with Jarrett's playing know that this artist could never abandon harmonic considerations—it's what he best integrates into his solos, and is what makes him accessible to new jazz listeners.

This CD contains most of the material released on *Bop-Be* (Impulse IA-9334) and *Byablue* (Impulse AS-9331). Three tunes had to be cut because of time considerations. I wish they wouldn't do that. Better in my view to issue the complete session on two CDs at reduced price.

Gratefully, they left in a ballad, Alec Wilder's "Blackberry Winter," which I consider to be among the best ever recorded. The delicacy and restrained touch of Jarrett's fingers on the keys, lagging slightly behind the beat at times, creates yearning and anticipation in the listener, an exquisite ache indeed. The sound on this release, incidentally, is more transparent than the other releases, and gets full honors considering its multi-miked origins.

Dewey Redman and Jarrett share most of the soloing on the rest of the cuts. Redman has a bold, full sound; Jarrett is intensely lyrical. The tempos vary widely and some members sit out on some cuts so the basic sound also varies. By the time this session took place the group had reached a decision to disband. Jarrett would go on to ECM Records and his solo concerts—an entirely different style and sound. Most of the cuts here are interesting, but it's "Blackberry Winter" that's the supreme gem of the collection.

Russell Novak

Gonzalo Rubalcaba: *The Blessing*
Rubalcaba, piano; Charlie Haden, bass; Jack DeJohnette, drums.
Blue Note B21/Z97197

Perhaps due to a lack of name recognition, this superb jazz pianist does not instantly conjure up a familiar image, either visually or musically. However, after listening to this release, I can assure you jazz fans that Gonzalo Rubalcaba is a name that will likely become much more familiar to all of us. Believe me when I tell you that Rubacalba's album "The Blessing" is truly just that. Within a simple modern jazz trio format, it is so intensely musical it begs for repeated listening. It contains a high degree of creativity, style, craftsmanship and pure musical execution.

Accompanied by such renowned artists as bassist Charlie Haden and drummer Jack DeJohnette, *The Blessing* has a relaxed, mature quality. Rubacalba is only 28 years old, but due to his exposure to a wide range of artists, he presents his musical artistry with a great technical polish. This, along with his varied mood swings and romantically compelling melodies and lyrics, will cause the listener to pay very close attention. Gonzalo is an extraordinary pianist who has captured the essence of numerous other fine pianists such as Billy Taylor, Bill Evans, Thelonious Monk, McCoy Tyner, etc, yet Gonzalo's music is inventive and original. He has created his own musical signature and artistic character.

From the opening track to the closing number, the listener will be treated to

passages in which Gonzalo's fingers seem to be literally flying all over the keys only to then settle into a quiet, peaceful and beautiful mood, which becomes very captivating and seductive. Besides Gonzalo, bassist Haden and drummer DeJohnette provide some very complimentary interplay throughout the album. This is a trio that definitely works well together, with the kind of musical synergy jazz lovers will appreciate.

There are a lot of catchy rhythms and melodies throughout this album. There is also a noticeable influence of the Afro/Cuban latin jazz sound. However, this should not be confused with the high spirited, brassy, percussion heavy type of latin jazz. Gonzalo's approach simply embodies the soul and passion of his native Cuba. In quickly looking over my notes (taken from repeated listening sessions with this album), I am hard pressed to find a selection I don't love. What I find are continuously positive notes on each selection and on *all* of the artists, not just Rubalcaba. However, if you pinned me down and forced me to select a favorite, it would have to be track #6, "Silver Hollow." This number has a sensuous opening with DeJohnette lightly taping his cymbals and Haden laying down sweet strumming on the bass. Gonzalo then quietly joins in with wondrous chords as his inventive fingers make stylish trips across the keyboards. The selection then continues in an alternatingly quiet then powerful and dynamic manner.

As much as I would love to provide a full description of each track, I will instead simply suggest that you listen for yourself. Rubalcaba's debut recording will serve as a wake-up call. His music sounds pure and gorgeous. I hope he provides more of his musical talent for us to enjoy. Unfortunately, from what I understand, due to his Cuban citizenship, he is banned from appearing on stage in the U.S. In fact, this recording was done in Toronto due to these same restrictions.

The overall sound quality of this recording is excellent, with simple miking techniques employed. The sound is natural and captures the sonic essence of each instrument superbly. All in all, this is a truly fine jazz album. As I said earlier, the title says it all!

Bill Wells

Frank Kimbrough: *Lonely Woman*
Kimbrough, piano; Ben Wolfe, bass; Jeff Williams, drums.
Mapleshade MHS 512628H

Clifford Jordan: *Live At Ethell's*
Jordan, tenor; Kevin O'Connell, piano; Ed Howard, bass; Vernel Fournier, drums. Mapleshade MHS 512629A

Ben Andrews: *Preachin' The Blues*
Andrews, guitar and vocals; Mark Wenner, harmonica; Jeff Sarli, "slap" bass.
Mapleshade 512696W

The MHS in the catalog numbers represents an affiliation with the Musical Heritage Society, which apparently commissioned these productions. Mapleshade is a new "audiophile" label whose recordings have, I am happy to report, considerable artistic merit in addition to glorious sound. In another article in this issue, one of our writers will report to you on the unique surroundings of the studio and producer/engineer Pierre M. Sprey's recording techniques.

These are *analog* originals and the signal path is minimalist.

I can tell you that they are very transparent and intimate. The response through the bass range is leaner than Chesky or VTL CDs, yet it is completely natural. Instrumental placement is very precise and the balances are perfect. You've got a nightclub table next to the stage for these.

Lonely Woman is really beautiful. Within the classic trio format, all the musicians relate to each other in an intimate way that reminds me very much of Bill Evans' sessions with Scott LaFaro. This is modern, post-bop music where the bass player and drummer are expected to be more than just time keepers. Both are excellent. They lay down an abstract, seamless bed of sound for the piano. Williams' cymbal work is delicate and well captured in the recording.

Ornette Coleman's composition, "Lonely Woman," is the most abstract tune on the album, but is very accessible. These guys listen to how they sound. They care about ensemble cohesiveness. They don't step on each other. They react to each other's playing and they stay interested. That's what you need for a good jazz album. And listen to Jimmy Rowles' "The Peacocks" (try to find the Stan Getz album by the same name on Columbia). It's another ballad that is particularly affecting for this sentimentalist.

I hadn't heard of Kimbrough before, but he's played with Anthony Braxton and Paul Horn. This is his third recording for Mapleshade, so based on his performance here I'm definitely going to get the other two.

Clifford Jordan is a much better known musician. He is a blues based, bop tenor player who recorded on many dates throughout the fifties and sixties with other great bop players like Max Roach, Horace Silver, and Kenny Dorham. He also showed ability playing in avant garde circles with Don Cherry, Woody Shaw, and Eric Dolphy.

Live At Ethel's was done over the course of three nights in a Baltimore nightclub. The sound is a touch less transparent than the studio recording above, but still a great achievement. The stage is very three dimensional and the sound is again intimate and involving. Jordan phrases delicately. He appears concerned with communicating nuances in the music and the ensemble playing is tight. There is nothing too experimental here. It's a standard type of program, but it is played with interest and concern for the compositions. No one falls back on clichés.

One surprise was when, in Billy Strayhorn's "Lush Life," Jordan picked up his microphone and sang the lyrics. It adds to the sense of liveness and sets up his solo well. O'Connell takes an extended solo here. His playing is a little more formula than Kimbrough's, but is very melodic. I highly recommend both these releases.

A Stereophile reviewer went to some lengths a few issues back to make the argument that white guys could sing the blues. I agree on a theoretical level, but this ain't one of those guys. I don't remember if this was the performance he was reviewing—I hope not. Ben Andrews' singing on Preachin The Blues sounds much too affected for me. He sounds like he's thinking about how a blues singer should sound rather than singing what he feels.

His voice is of the whiny variety, with the obligatory careless pronunciation and country drawl. His credits show that he's played with the big blues

men, but nothing he does here is very interesting for me. "Gallows Pole" is the best of the lot. It has a stark arrangement and instrumentation that reinforces the bleak feeling of the song. For the rest of it, bring back the black guys for the blues and buy the jazz recordings listed above.

Russell Novak

Abdullah Ibrahim (Dollar Brand): *Desert Flowers*
Ibrahim, piano, vocal, and synthesizer. Rudy Van Gelder, engineer.
Enja R2 79680

Arthur Taylor: *Mr. A.T.*
Taylor, drums; Willie Williams, tenor; Abraham Burton, alto; Marc Cary, piano; Tyler Mitchell, bass. Rudy Van Gelder, engineer.
Enja R2 79677

Ibrahim is a jazz musician with truly international influences. Born in Capetown, South Africa (and in exile for 13 years at one point), he has lived and studied in Europe and America, and recorded extensively. When he first recorded here, I found his phrasing somewhat stilted. African musicians have to *learn* to *swing* in the way Americans do when they play jazz. That was in the sixties.

Since then he developed swing and technique and is a major jazz artist. *Desert Flowers* is not in a typical jazz vein, however. It verges on New Age (dirty word)—impressionistic jazz, if you will. Solo piano tunes are taken at ballad paces, and occasional vocals on the program are nearly free verse poetry. "For John Coltrane" is a hymn-like verse and piano solo. His fingering on the piano reminds me of Paul Bley. There is lots of space between the notes, long, open-ended melodic lines. On two tracks he uses synthesizer sound effects which are tastefully done.

Duke Ellington's "Come Sunday," a spiritual from the "Black, Brown, and Beige Suite," originally sung by Mahalia Jackson and played by Ray Nance (violin), is brought back here for sentimental treatment. This is a quiet, gentle session with excellent sound.

Master bop drummer, Art Taylor, Veteran Of A Thousand Recording Dates, is back with a new incarnation of Taylor's Wailers. On *Mr. A.T.*, he's got a young, excited group of players and they make some great jazz, beginning with the very first number, "Mr. A. T." Willie Williams performs a long and soaring tenor solo that feels uplifting in mood over a fast paced rhythm section. Marc Cary takes over on piano for another interesting solo. He shows sensitivity and good technique.

Randy Weston's "Hi-Fly" is taken at an even faster pace. Williams and Burton trade fast figures in the opening theme, then Williams solos in an enthusiastic, staccato fashion. These first two numbers set an optimistic feeling for the entire date. It's been a long time since I've heard this kind of excitement from a bop date. Yes, you can make fresh music from an old idea.

The general feel of this recording is like one of the classic Blue Note sessions, and it has the Rudy Van Gelder sound to match. Nice to hear you again, Art. Good job, Enja.

Russell Novak

Rabih Abou-Khalil: *Al-Jadida*
Abou-Khalil, oud; Sonny Fortune, alto; Glen Moore, bass; Ramesh Shotham, South Indian drums, percussion; Nabil Khaiat, frame drums, percussion. Carlos Albrecht, engineer. Enja R2 79674

As can be gleaned from a look at the musician credits, this session is an attempt to combine traditional Arabic music with elements of jazz. The liner notes document the various influences on Eastern Music and make interesting reading. This may be the most successful session of this type yet recorded.

The numbers are Third World "jam sessions" that always involve the listener in the intricacies of the percussion and the complex melodies Abou-Khalil plays on the oud. Within the context of this exotic music, Fortune's alto statements are inventive—long, winding, stark melodic lines over the throbbing beat of the percussion instruments. He is particularly good on "Story Teller" and "Nadim," where wonderful moods are evoked. All soloists are given plenty of opportunity to stretch out and find their groove.

Abou-Khalil has lived and studied in the West, and I felt I could pick up "blue" notes, particularly on "Wishing Well," along with other Western style phrases. The music remains overwhelmingly Eastern however, and thankfully so because these kinds of collaborations, if they try to share equally, don't really work.

The sound is very good and should be a treat for audiophiles. The recording is transparent and well balanced, and places the instruments nicely within the soundstage. Occasionally some percussion effects come from way outside the speakers and cause you to look up. Instruments are miked closely enough for a sense of involvement, but not so closely that they are in your lap. Buy this one for a musical change of pace.

Russell Novak

Quincy Jones: *This Is How I Feel About Jazz*
Jones, arrangements and leader; Art Farmer, trumpet; Zoot Sims, Phil Woods, Lucky Thompson, Benny Carter, Art Pepper, saxophones; Milt Jackson, vibes; Hank Jones, Billy Taylor, pianos; Paul Chambers, Charles Mingus, bass; Charli Persip, Shelly Manne, drums; and many others; (1956 & 57). Impulse (GRP) GRD-115; monaural.

Johnny Hodges: *Everybody Knows Johnny Hodges*
Hodges, alto; Paul Gonsalves, Jimmy Hamilton, tenor; Lawrence Brown, trombone; Richard Davis, bass; Grady Tate, drums; and many others; (1964 & 65). Impulse (GRP) GRD-116

Did you know Quincy Jones was a very prominent jazz arranger and composer? Back at the Dawn Of History, in the fifties and sixties, before Quince became a schlock Funkmeister, he could attract the powerful names listed above to play his arrangements, and he received critical raves. Of course he's now just an old guy writing crap that appeals to the brain dead and trying to stay young. That's what selling out will get you.

But here is Quince before all that. These ABC Paramount sessions from 1957 give us a very young jazzman thrilled with the opportunity to write, and at his creative peak. He had been

prominent since age 19 when he wrote "Stockholm Sweetnin'" for Clifford Brown and Art Farmer in 1953. These are modern swing arrangements. They reflect Quincy's West Coast background, but he tries to stay away from being too "cool."

Unlike many big band albums where arrangers and leaders try too hard and play full blast through every number, these arrangements show respect for dynamics and contrast. He showcases the soloists, and when the band does blow full tilt, it sounds all the more meaningful because it is used as punctuation and emotion. You can hear the style he would soon employ with the Count Basie band on a fabulous album, Basie One More Time on the Roulette label.

"Boo's Blues," "Evening In Paris," and "Stockholm Sweetnin'" are memorable Jones compositions. There is also a lovely ballad medley: "What's New," "We'll Be Together Again," "Time On My Hands," "You Go To My Head," and "Laura." The sound here is hi-fi, not stereo, and not very transparent. On the other hand it's not offensive, just typical mid-fifties stuff. Three selections were cut from these sessions for reasons of space. I must repeat my criticism of this methodology: Stop doing that, GRP. If you're going to reissue something, make it complete.

Johnny Hodges' unique sound and long association with the Duke Ellington Orchestra made him the primary voice of that band after Ellington himself. Hodges also had a substantial recording career on his own and recorded many albums for Verve, the various Columbia subsidiaries and RCA. Hodges had a sweet tone and a plaintive quality to his intonation. On up tempo numbers Hodges (The Rabbit) would lope along, his relaxed technique belying the fast pace. He was well known for his ballads, where his use of glissando and his ability to sustain slow tempos sounded particularly sorrowful. Billy Strayhorn's "A Flower Is A Lovesome Thing" fills that bill here. The "I Let A Song Go Out Of My Heart"/"Don't Get Around Much Anymore" medley are classic medium tempo Hodges numbers where he flits and glides all over the melody. "Mood Indigo" is such classic jazz and such a good performance, you'd have to be a foreigner or a stupid young person not to appreciate it.

These performances are taken from two original Impulse albums and use mainly other Ellington personnel. The sound is good and this time their doesn't appear to be anything cut out as the result of combining two albums.

Russell Novak

Wynton Marsalis: *Thick In The South*
Marsalis, trumpet; Marcus Roberts, piano; Joe Henderson, tenor; Bob Hurst, bass; Jeff Watts, drums; Elvin Jones, drums on two cuts. Tim Geelan, chief engineer on all sessions. Columbia CK 47977

Wynton Marsalis: *Uptown Ruler*
Marsalis, trumpet; Marcus Roberts, piano & alto; Reginald Veal, bass & trombone; Todd Williams, tenor; Herlin Riley, bass. Columbia Ck 47976

Wynton Marsalis: *Levee Low Moan*
Marsalis, trumpet; Marcus Roberts, piano; Wessell Anderson, alto; Todd Williams, tenor & soprano; Reginald Veal, bass; Herlin Riley, drums. Columbia CK 97575

These recordings comprise the three volumes of *Soul Gestures In Southern Blue*, recordings that mark Marsalis' full maturity as a *creative* artist. It is a re-examination of the musical form that has had the most profound affect on American music—blues, the root of jazz (and rock). It is a large scale undertaking and it succeeds completely.

Marsalis was frequently criticized on his early recordings for sterile, technical playing. To a certain extent he seemed to be saying "look what I can do" or "now I'll play like. . ." That is not the case here. Marsalis was always a highly technically competent musician. He bridged the gap between himself and the instrument long ago, being able to play anything in any style. But now he has bridged the gap between himself and the music. He is able to think and create while playing without considering the style or approach. In short, he is able to address his feelings directly through creating music. That is the last hurdle every first class musician faces.

What is amazing is that he is able to breath new life and invention into old forms. This is moody music. The statement of the themes and their development has retrospective, yet surprising quality, like when you rediscover something from the dim recesses of memory and say, "Yes, this is the way it was. It's beautiful." Even the up tempo numbers, while still managing to swing, have this quality.

Thick In The South has guest artists Joe Henderson on tenor, and John Coltrane's brilliant drummer Elvin Jones (on two tracks) added to the basic quartet. "Elveen" shows off Jones' ability to cradle the band in his cymbal work, and Joe Henderson demonstrates his chops with a long and well developed solo. Marsalis' work is good throughout, but it is on "So This Is Jazz, Huh?" that the group really becomes a cohesive unit and Marsalis advances the state of the blues playing art. Marcus Roberts keeps the group grounded in the chords, and his solos are at a very high standard throughout these sessions. On "L.C. On The Cut" Marsalis and Roberts get into some interesting call and response playing before Henderson takes his solo at a heartbeat tempo and cuts a very deep groove.

Uptown Ruler is perhaps the most consistently creative and varied set in the series. There are heavy spiritual elements such as "Psalm 26" interspersed with the varied tempo blues playing. Uptown Ruler was a mythical New Orleans hero, and the tunes here are loosely based on an attempt to characterize him. "Down With Homey," as the notes state, is the Uptown Ruler in action, out and about, ready to defend his values, slow to anger but righteous in response. The number is animated artistically, with each soloist stretching the limits of the blues form.

Levee Low Moan adds Wessell Anderson on alto and Todd Williams on tenor and alto to achieve the widest variety of instrumentation in the series. Levee also has the strongest down-home, southern feel. It is a fitting conclusion of an exploration of a form that began in the rural south a long time ago.

Columbia has given these recordings a less than transparent recording, once again proving the audiophile maxim: The Better The Performance. . . . I'm sorry to report that there is a haze that the musicians have a hard time breaking through. Plus, there is a peculiar lack of dynamic interplay between the

musicians. You have to buy these for the performance and simply get used to the fog. I hope, now that Sony has developed their super bit mapping technique, they will give better support to their artists. Old 1960s recordings have more tactile presence than these.

Russell Novak

Tommy Flanagan: *Beyond the Bluebird*
Flanagan, piano; Kenny Burrell, guitar; George Mraz, bass; Lewis Nash, drums. Max Bolleman, producer; Diana Flanagan, producer. Timeless CDSJP 350.

John Hicks: *Is That So?*
Hicks, piano; Ray Drummond, bass; Idris Muhammad, drums. Max Bolleman, producer; John Hicks, producer. Timeless CDSJP 357

Tommy Flanagan, with the possible exception of Hank Jones, is the preeminent postbop pianist on the scene today. A veteran of quite a few classic dates (Sonny Rollins' Saxophone Colossus and John Coltrane's Giant Steps, to name two of the greatest jazz recordings from the late '50s), this professorial looking, unassuming artist always impresses with his sure timing, impeccable execution and all around tastiness.

On this spring 1990 date, his trio is augmented by fellow Detroit native Kenny Burrell on guitar, forming a uniquely inventive and melodically graceful quartet. The two masters interact beautifully throughout to create music of concentrated power and intense lyricism. The program varies in mood and tempo even though it consists primarily of both recognizable and relatively unknown originals by jazz figures such as Benny Carter, Charlie Parker, Thad Jones, Barry Harris and Dizzy Reece, in addition to the two leaders of this date. The sole exception is Jerome Kern's "Yesterdays," which may very well be the masterpiece of this wonderful recording. Highly recommended.

A consistently energetic and thoughtful player, the increasingly recorded pianist John Hicks has created a marvelous album. Like his mentor Tommy Flanagan, who accompanied the legendary Ella Fitzgerald for many years, Hicks honed his improvisational skills during a five year stint in the '70s with the highly individual vocalist Betty Carter. And similar to Flanagan, Hicks' playing possesses considerable touch and soul, elements displayed throughout on this July 1990 session.

With technique to spare and with sympathetic rhythmic support from two of his more regular collaborators, Hicks rolls through a diverse program that includes standard war-horses ("I'll Remember April," "Autumn Leaves" and a version of "Yesterdays" that, while engaging, does not quite attain the heights of the Flanagan version cited above), along with bossa (Jobim's "How Insensitive") and blues (Rollins' "Sonnymoon for Two"). Additionally, his poignant rendering of "Never Let Me Go" marks Hicks as a soloist of uncommon subtlety. Also recommended.

Marty Milgrim

Lee Konitz Gil Evans: *Heroes*
Konitz, alto & soprano saxophone; Evans, piano. Chip Stokes, engineer; John Snyder, producer. Verve 314 511 6212

Lee Konitz Gil Evans: *AntiHeroes*
Personnel as above.
Verve 314 511 6222

I had the good fortune to see this venerable pair of jazz masters perform at the Greene Street Bar in New York City during the week in January 1980, when these live sessions were recorded. Known for his unique, masterful collaborations with Miles Davis, sessions that considerably enhanced the reputations of both artists, Evans work at the time of this recording had long been established as the standard by which all contemporary writing for jazz orchestra must be measured. However, his piano playing had never stood out other than to provide the obligatory signposts within his increasingly sophisticated, tonally colored arrangements.

For his part, Konitz was one of the few alto saxophonists to emerge in the late '40s and establish his own distinctive voice, refusing to adhere to the all-consuming model provided by Charlie Parker. His association with Evans began in the laboratory of Claude Thornhill's band and continued to develop in the pivotal "Birth of the Cool" band identified, perhaps too strongly since there were many protagonists, with Miles Davis. Konitz has made many stellar recordings through the years in a variety of contexts, his playing generally evincing much conviction in spite of a tone that can be characterized, on occasion, as pallid.

As with my initial exposure to this shortlived duo, the playing on these recordings strikes me as more interesting for the repertoire that is explored than for the sparks of creative interplay that occasionally emerge. Not too many musicians will assay Charles Mingus' "Reincarnation of a Lovebird" and "Orange was the Color of her Dress." These particular performances come off quite successfully—more so for Konitz, who has always been comfortable within the austerities imposed by a duo setting. Evans, on the other hand sounds tentative, although others may perceive his pianistic limitations as a model of subtlety. These recordings are for devoted fans of the two artists. There are more representative recordings in ample quantity elsewhere.

Marty Milgrim

Mulgrew Miller: *Time And Again*
Miller, piano; Peter Washington, bass; Tony Reedus, drums. Paul Goodman, engineer; Orrin Keepnews, producer. Landmark LCD15322

Having consistently enjoyed three of the previous five Mulgrew Miller releases on the Landmark label (do not construe this as a criticism of the other two, as I simply do not own them), I was glad to receive this one for review. Happily, this release does not contradict the impression that Miller is steadily evolving into one of the master pianists, similar to Kenny Barron—who is now and will continually be in demand by his peers and by others who butter their bread within the post-bop tradition. Although still a young man, Miller has an impressive resume, having apprenticed in 1980 with Mercer Ellington's stewardship of Duke's band, Art Blakey's volatile Jazz Messengers, the demanding Betty Carter and, most recently, as a key participant of drummer Tony Williams' exciting quintet.

Miller's work reflects his diverse pianistic influences: Bud Powell (to whom he nods here with a delicate reading of the bop master's "I'll Keep Loving You"), McCoy Tyner and Wynton Kelly, among the most prominent. What sets the present release some-

what apart from its predecessors is the inclusion of a greater number of Miller originals: the swinging opener "Tongue Twister" and the quirky "If It Ain't One Thing—It's Two" being especially appealing. Another original, "Woeful Blues," brings to the fore his Mississippi roots and Memphis upbringing. Miller is supported ably throughout, particularly by Peter Washington who is one of the finest young bassists on the scene today.

Marty Milgrim

Red Rodney: *Then and Now*
Rodney, flugelhorn; Chris Potter, alto & tenor sax; Garry Dial, piano; Jay Anderson, bass; Jimmy Madison, drums; Bob Belden, arranger; Bill Allen, engineer; David Chesky, producer. Chesky JD79

The elf-like, garrulous Red Rodney is truly a survivor of the various gauntlets that jazz musicians of long standing have had to endure. A member of many of the important white orchestras of the late 1940's (Gene Krupa, Woody Herman, Stan Kenton, Claude Thornhill), Rodney got his baptism in the emerging bebop scene from none other than its primary founding father, Charlie Parker. To a Jewish kid (born Robert Chudnick, nicknamed "Chood" by the witty Parker), playing in the front line with Bird was extremely heady stuff, an intense experience that profoundly influenced his life—the "highs" as well as the lows—thereafter. Aspects of the musical and personal relationship, though inevitably distorted, are captured in Clint Eastwood's noirish film portrayal of the alto sax giant, Bird.

Terming the music contained in this well-recorded CD "Bebop for the '90s," Rodney sounds totally in command throughout, albeit on the mellower flugelhorn instead of his customary trumpet. Highlights among the eleven selections of this lengthy recording are a slew of bebop classics, including four Bird compositions (the seldom played "Marmaduke" and "Congo Blues," sounding particularly energized), Bud Powell's difficult, Latinized masterpiece ("Un Poco Loco"), Dizzy's wonderful tribute to Woody Herman ("Woody'n You") Benny Harris' bebop anthem ("Crazeology") and two Tadd Dameron pieces ("The Scene is Clean" and the gorgeous ballad "If You Could See Me Now"). Accompanying Rodney is his regular quintet, which includes the young and vigorous saxophonist Chris Potter who plays superbly throughout.

A terrific bonus is an engaging and fascinating discussion of bebop by Rodney, whose reminiscences of the era make this particular lover of the music wish once again that he had been there.

Marty Milgrim

McCoy Tyner Big Band: *The Turning Point*
Kamau Adlifu, Earl Gardner, Virgil Jones, trumpets; Steve Turre, Frank Lacy, trombones; John Clark, French horn; Howard Johnson, tuba; Doug Harris, soprano sax & flute; Joe Ford, alto sax; John Stubblefield, Junior Cook, tenor saxes; Tyner, piano; Avery Sharpe, bass; Aaron Scott, drums; Jerry Gonzalez, percussion; Bob Belden, director. A.T. Michael McDonald, engineer; JeanFrancois Delber, producer. Verve 314 513 5732.

Since leaving John Coltrane in 1965, McCoy Tyner has been prolifically recorded. His highly distinctive and thunderous sound has been captured in a variety of settings, from pure soloist to all the combo configurations

imaginable, and on this recording as principal voice within a big band context. Without exception his contribution has been one of non compromise with the commercial tastes that dictate success to others (who secretly must envy the honest musicality he conveys with such awesome technical prowess). As might be expected then, many wonderful recordings have ensued during the past three decades. If any criticism can be directed at Tyner, it is that his intense percussive style can verge on the bombastic, overwhelming the casual listener unprepared for the onslaught.

Not so here. While his passion and energy remain unabated, these qualities serve to invigorate this juggernaut of an ensemble with an emotion and dynamism that this listener finds infectious. The recording here is a worthy sequel to the initial release of this band (*Uptown/Downtown*, a Milestone CD). Tyner reprises two stellar compositions, "Passion Dance" and "High Priest" (the latter, a tribute to Thelonious Monk) that he introduced on a pair of classic Blue Note recordings back in 1967. Both retain their vitality and provide instructive examples of one of the essential tenets of jazz: There is no one definitive way to play it. Other highlights include sensitive interpretations of two of my favorite ballads, Duke Ellington's "In a Sentimental Mood" and Matt Dennis' "Angel Eyes." This is a good one.

Marty Milgrim

Rock Block

HOW CAN YOU BUY WILLIE'S MEMORIES?

Although my little "Aprils Fools" joke about a Dylan/Specter/Wilson collaboration apparently fell flat (you were right, Russ), my review of Willie Nelson's *IRS Tapes* generated a bunch of calls and letters—all complaining that the album was unavailable in record stores. Although I bought it through a heavily promoted cable TV offer, I had understood that by the time our magazine came out it would be available in record stores. I was mistaken. For whatever reason, the promotion was discontinued and Sony held up the general release, in effect pulling all distribution.

I recently spoke to a Sony producer who informed me that Willie's recording *would* be in stores by *this* Christmas—in other words, by the time you read this. Look for it again.

Mark Block

Eric Clapton, *Unplugged*
Producer: Russ Titelman; Recording: Jim Barton; Mix: Steve Boyer.
Reprise 9 45024-2

Eric Clapton's career has created a cognitive dissonance problem for his early fans: How could we have ever worshipped this god of the electric guitar? Did he really forsake his gift—sell out—and become a merely mortal (albeit highly successful) "singer/songwriter?" Or were we wrong about him all along? Clearly, he was uncomfortable in role of superstar; drugs and self-doubt took their toll. Perhaps he simply burned out—the Bjorn Borg of rock and roll. Unlike Borg, however, Clapton had the courage and insight to overcome his emotional problems and reinvent himself. I see it as a measure of his all-around talent that he flourished even more as a songwriter and singer than he did as a guitarist.

Unplugged is, perhaps, a coming to terms with himself and his talent, and a recording that might even satisfy both his older and his younger fans. Recorded live in London for the MTV series of the same name, the acoustic format of the show forced Clapton to re-examine his act. The re-fashioning resulted in a performance both artistically mature and (yes) top-ten commercial. It's not a sell-out; it's who he is.

Inquiring audiophiles may want to know: Are they really unplugged, or is there electronic cheating going on? The latter, sorry to say. The performance was multi-miked and amplified for a studio audience. The "ambiance" one hears on this recording, therefore, includes leakage from loudspeakers into the assorted microphones; there also seems to be a bit of artificial reverb on Clapton's voice. Keyboards are electric, and a lack of performance credits for what sounds like a "wind section" on "Tears In Heaven" can mean only one thing: synthesizer! For shame, MTV.

That said, let's give credit where credit is due. The recording is perfectly balanced and natural. I've heard it on a bunch of different systems, and if it sounds either too bassy or too bright on yours, don't blame the recording. The low end should sound hefty but not bloated; occasional foot stomping by Clapton should sound like it's on the edge of freaking out the insufficiently isolated microphone, but it shouldn't shake the room or overwhelm the music. Sibilants, most noticeably on "Tears in Heaven," sound splashy and distorted on some speak-

ers, but other systems have no trouble with them at all.

Clapton, still not wanting to be the center of attention, is placed to the right on the soundstage. One small imaging anomaly: The leakage from the studio's speakers results in the paradoxical situation of louder sounds—Clapton's lead guitar and vocal, in particular—dominating the ambient mix, making them sound slightly farther back on stage than some of the quieter sounds. Despite the close miking, the recording produces a decent illusion of depth. Yes, you can hear the multimiking—no one will ever mistake it for a Chesky—but it's mercifully unprocessed. And for the nursing home set—no electric guitars!

The album opens with a Clapton instrumental, "Signe," a pretty, up-tempo bossa nova performed on classical guitar. After the many unexpected metamorphoses in Clapton's career, you would be forgiven for thinking that in this latest iteration he's decided to become . . . a white Earl Klugh! But put such thoughts out of your head; the piece is a perfect, sweet little palate cleanser of an opening, setting up the meatier dishes to come.

The next two cuts, Bo Diddley's "Before You Accuse Me" and Big Bill Broonzy's "Hey Hey," take Clapton back to his blues roots; the responsive audience immediately begins clapping along. This stuff is Clapton's forté, and the performances here have the luster of jewels honed and polished to perfection—but not to the point of smooth slickness.

Then there's "Tears In Heaven," Clapton's commercially successful (again) coming to terms with the tragic death of his young son. Yes, it's sappy, particularly trite lines like, "Beyond the door/There's peace I'm sure." But the song ultimately resonates. When Clapton sings, "And I know I don't belong/Here in Heaven," we understand the painful double entendre: Clapton knows that it's not yet his time; he also knows that it may never be his place.

A heartfelt rendition of Clapton's own "Lonely Stranger" is followed by "Nobody Knows You When You're Down and Out." This acoustic version of a tune familiar to many of us from *the* guitar album of all time, *Layla And Other Assorted Love Songs*, sets the stage for the centerpiece of *Unplugged*: a mellow, laid-back version of old "Layla" herself.

Critics have lambasted this "Layla" as being nonsensical: How can Clapton sing this song—a passionate, anguished, heartbroken plea for love ("You got me on my knees . . . I beg you darling, please")—in such a low key, low affect tone of voice? How can Clapton trash his own masterpiece? That's just so much crap. (These are the same critics who love to criticize artists for repeating themselves.) I myself haven't been able to get this acoustic version out of my head. Every time it starts playing I become spellbound, hypnotized. The effectiveness is due in no small measure to ex-Allman Brother Chuck Leavell's haunting piano accompaniment, and to the quiet background vocals provided by Katie Kissoon[1] and Tessa Niles.

Yes, I agree that this new interpretation doesn't make any obvious sense, although I could waste my time and yours thinking up an intellectual ration-

1 Here's a rock trivia question for you: Name the one-hit wonder single from 1971 by Mac and Katie Kissoon. A: "Chirpy Chirpy Cheep Cheep."

alization for it. The emotional fact is that I find it spine tingling, poignant, touching, and, finally, mesmerizing. In music appreciation, when it comes down to a battle between heart and head, I don't argue with my heart. (Why try to diminish one's pleasure?) In the words of Pascal (rephrased by Woody Allen in *Husbands and Wives*), "The heart has its reasons, of which reason knows nothing." The performance works (which cannot be said of Woody Allen's recent on *or* off-screen roles).

Don't get the idea that Clapton's singing is lacking in passion on other songs. Besides the previously mentioned "Lonely Stranger," Clapton also gets himself cranked up for "Running On Faith." Here he brings out the dobro and glass slide, and proves he's been practicing a bit since Duane Allman gave him lessons back on the *Layla* sessions. For those who still wish Delaney Bramlett had never given E.C. the courage to be a lead singer, listen to Clapton's vocals on these songs. He's a great singer.

The dobro stays on stage for the next cut, Robert Johnson's "Walkin' Blues," while the rest of the band takes a breather. Without the distractions of the other instruments, you can close your eyes and imagine you're right there in the front row. Clapton proves that although he may no longer have the heart for power trio rock 'n' roll, nobody can do a fresher, more appealing Robert Johnson interpretation. Next, Clapton moves into a folksier blues genre with Leadbelly's "Alberta," and forgets to take the bottleneck off his pinky at the start of the tune: "Hold it, hold it," he tells the band as they start the song over.

By this time both band and audience are loose and having fun, so on "San Francisco Bay Blues" Clapton and mates break out kazoos, harmonica and a washboard for some serious jug band silliness. After the big kazoo finish, someone (second guitarist Andy Fairweather Low?) mutters good-naturedly, "Never again." It's not really Clapton's nature, but he seems determined to have a little fun. Pandering? Throwing in the kitchen sink? No, just putting on a good show.

The album closes with three songs in a pattern established earlier: a quietly bluesy Robert Johnson classic, "Malted Milk"; a moving, emotionally wrenching Clapton original, "Old Love," in which the ex-god offers a great, fiery guitar solo (for ye of little faith); and a rousing, audience pleasing standard, "Rolling and Tumbling." What's not to like?

Did I mention that Clapton writes some pretty nice songs? Did I say he sings real well? Did I tell you he picks a mean acoustic guitar? If you still have a problem with Clapton after listening to this album, the problem's yours, not E.C.'s.

Mark Block

Jules Shear, *The Great Puzzle*
Producers: Stewart Lerman & Jules Shear. Engineer: John Agnello Polydor 314 511 200-2.

I've determined, after listening to this album for a couple of months, that the great puzzle of the title doesn't concern life and death or good and evil or love and hate, or even why the guys who park your car always change the radio station and re-direct the air vents. The truly great puzzle is why this album hasn't been a breakthrough smash for Jules Shear. OK, that's a little overstated (I promise it'll be my last hyperbole today).

Put this recording on in the background and it may disappear, sounding like the endeavor of a generic, punky folk rock band, pleasant but of

little distinction. Its excellence is sneaky, so attention must be paid. Listen to the title track: About life and relationships Shear observes, "I can't wait to see the world as it is/And how the whole perception/Turns from rule into exception/With the one tiny detail I miss/. . . It's a great puzzle but you got to like games." The clever, canny lines are fine enough, but it's the musical build that, as with many songs on this album, grabs you late and tightens slowly until you finally think to yourself: This is a great song; how long has it been playing?

Shear should be familiar, but only vaguely so, to most rock fans: as the Jules of Jules and the Polar Bears; as a songwriter for hip bubblegummers such as Cyndi Lauper and the Bangles; as conspicuous main squeeze of 'Til Tuesday's lusciously frail Aimee Mann (where are they now?); and most recently as host of the initial segments of MTV's "Unplugged." As an aging critics' darling, he seemed to be drifting into the ranks of folkie troubadours like Willie Nile. His last effort was an acoustic, minimalist effort, *The Third Party*, which inspired "Unplugged" and featured only guitar and vocal—a great concept, but problematical given Shear's limited abilities as a vocalist.

Those problems are addressed with *The Great Puzzle*. It's mostly full blown rock 'n' roll, and as rock albums go, this one has enough hooks and melodies to compete even with a Tom Petty effort. Shear's songwriting skills, while not completely distinctive, have a knack for the catchy and commercial while at the same time demonstrating keen intellectual and intuitive strengths. Ian Mathews thought so much of Shear's work that he recorded an entire album of Shear numbers, *Walking a Changing Line*, in 1988.

Read the lyrics to "We Were Only Making Love" and you'd swear an old, perhaps lost, perfectly realized Jackson Browne song had found its way onto the wrong album: "I couldn't see it happening/The change that comes upon us slow/And changes us before we know/Into a different same old thing/. . . Well I thought that we were really doing something/But we were only making love." The plaintive, David Lindley-esque slide guitar solo serves to paint an even stronger *Late for the Sky* picture. The song's a stunner; not to knock Browne's more political direction over the last decade, but he hasn't written anything this personal and emotionally true in years.

"The Sad Sound of the Wind" is a breath taking, Byrds-like number replete with jangly electric guitars and a catchy chorus right up there with McGuinn's best. After just two listens I couldn't get it out of my head: "The sad sound of the wind/It's blowing through my heart/It whistles in the dark." Shear's voice, unfortunately comes nowhere near McGuinn, despite the breathy nasality that evokes Dylan/McGuinn/Petty just enough to make one wish one of these more distinctive singers (or perhaps Shear collaborators Maria McKee or Aimee Mann—even, god forbid, Cyndi Lauper) were doing the song. But if there's one thing rock has proved over the years it's that you don't have to be a great singer to sing a great song.

Sound is above par for a modern rock effort; it's compressed, lacking transparency, and devoid of inner detail, but without any of the overt nasties that plague many albums. Cuts with the least instrumentation, such as the "Unplugged" style arrangements on "Something Else to Me" and "Bark" are, not surprisingly, the most transparent. In its favor, the CD exhibits good depth, width, and tonal balance, and the vocals are fairly *au naturel*—no excessive reverb or EQ to hide what Shear's got, warts and all. I guarantee the warts will bother some listeners, so

be forewarned, but do take that chance; this is a great album.

Mark Block

The Cure, *Wish*
Producer: The Cure and David M. Allen. Engineer: David M. Allen and Steve Whitfield Elektra/Fiction 61309-2

What you may not realize is that *Wish* is The Cure's *fifteenth* album. Of course, the cast of characters has changed a bit with every recording. But, as an entity—and quite focally in the person of band founder and leader Robert Smith—The Cure has outlasted even Margaret Thatcher, evolving from thinking-adolescents' angst into a riper, more full-bodied blend of anger and despair. Musically, not to mention stylistically (a genealogy of Cure make-up and hair-dos could take up a volume), The Cure means many things to many people: They are "college" rockers to the same budding professionals who propelled R.E.M. to fame and fortune; "alternative" musicians to those delighted to have got beyond Led Zeppelin without tuning in to Madonna; "gothic" legends to the underground set; and garden-variety pop smashes to anyone over nine who's heard their singles.

None of this, if you haven't given them a listen yet, will in any sense prepare you for *Wish*. Cure regulars will find nothing matching the dance pop savvy of 1987's *Kiss Me . . .* singles, nor the gloomy grandeur of 1989's *Disintegration* (you may, however, note a few pointed gestures towards 1983's legendarily disturbing *Pornography*). And just about everyone will be confused by all the hype about the two "happy" songs. Forget about it. This album will not (or only momentarily) have you dancing on your toes on a wave of pop euphoria. What it will do is alarm you, coax you, put you off, draw you back in, and then—when you least expect it (or after about six good listens)—do what all pop records *really* want to do: sink deep beneath your skin.

The production ranges from calculated minimalism ("To Wish Impossible Things") to almost maddening multi-texture ("Cut"). Instruments, including Smith's outrageously versatile vocals, tend to resonate against each other rather than occupy specified planes—as though everyone were playing his own private line of melody. The resulting sounds are engagingly complex, verging on byzantine. How nice it would be to have it all cleanly reproduced on compact disc! Alas, despite the presumably up-to-snuff offerings of "The Manor" (Richard Branson's mythic studio-of-studios in Oxfordshire), *Wish* is shockingly flat—all that sophisticated guitar-work hidden in some faraway place. *[This CD sounds so bad I'd call it "amateurish" if I didn't know better. The drum sound is one of the worst I've ever heard.—ED.]* Still, you hardly notice when it's blasting away in a car.

Having said that, it seems dangerous to anatomize *Wish*, because it might easily become one of those CDs we reprogram into "best of" versions of themselves. Don't do it. Don't, under any circumstances, pass over "Open" even if you don't particualry *want* to descend into a melancholic (alcoholic) daze—the other songs won't feel the same without it. Another track, "From The Edge Of The Deep Green Sea," is one of those frenetic, obsessive Cure songs that refuses to work as pop music; but just when you're wishing it away it pulls you in and starts to make perfect, and perfectly musical, sense.

For the record, "Doing The Unstuck" is probably the best song on the album, "Friday I'm In Love" is likeably balmy, "A Letter To Elise" (inspired by Kafka's famous epistles) is gorgeous, and "End" (by which point the last trace of pop anesthesia has long since

vanished) is the archetypally postmodern way to finish an album—that is, without any sense of closure at all. The solution: Listen to it all over again.

Lauren Goodlad

King's X: *King's X*
Ty Tabor, lead guitar; Doug Pinnick, bass guitar; Jerry Gaskill, percussion; Sam Taylor, producer; Steve Ames, engineer; Atlantic Records (CD)
7 82372 2.

Law And Order: *Rites of Passage*
Shane, vocals; Phil Allocco, lead guitar; Sean Carmody, bass guitar; David Todd, drums; Mack, producer and engineer; MCA Records MCAD 10294.

Many audiophiles may cringe after discovering what I will be writing about. So, up front, I would like to beg your attention for just a few moments. My musical preference is hard rock/heavy metal. Please don't turn the page yet! I am not talking about the typical MTV fare, or some other top 40 fodder, but intelligent metal. This is not an oxymoron. Good heavy metal is music that is not only pulse quickening and energetic, but instrumentally virtuous and well constructed.

My interest in metal began as an alternative to the typical, advertiser-controlled, safe AOR nonsense I have spent much of my life being subjected to. While my musical taste is not in step with most others who appreciate the sonic qualities of high-end equipment, I believe it is important to embrace *all* forms of music. Try these heavy metal pieces. After all, the love of music is the true measure of an audiophile, not spending $1,000/meter on exotic interconnect wire, or getting up every ten seconds to refocus the imaging of the speakers. Put this music on, whatever your usual tastes may be, and enjoy.

King's X is back with their forth album, simply entitled *King's X*. But that is as far as the simplicity goes. This trio may be the finest collection of musicians in metal today. The intricacies and the development of each song and the precision with which they are played put King's X head and shoulders above many bands in rock history, including the over produced "art-rock" bands of the 70s, and there are harmonies as sweet as Crosby Stills & Nash or (gasp) the Beatles. With all of this, the great thing about the band is that they can kick ass (but nicely).

The electric guitar is brought to a new level here. I was particularly struck by the guitar line intertwining with the vocals, slowly unfolding and building into a phenomenal solo, then brought back in with the vocals on a track called "The Big Picture." A great example of the voices working together in an almost angelic sound can be found on "Not For The Dead," which also has an Indian raga flavor to it, complete with sitar. Then of course, there is the full out "King's X" brand of rock found on "Black Flag," the first single released from the album.

Though still having the occasional underlying message of the Good News of Jesus Christ on a couple of the tracks, King's X is never preachy or obtrusive in their beliefs. With the exception of the beautiful illustration donning the cover of the CD (one more example of cover art not suffering due to the demise of 12" vinyl), you may not even realize this fact—though a little morality is not necessarily a bad thing in light of some of the bad press metal gets.

King's X is a fine example of cerebral metal, not the cliché sex, drugs, and

rock & roll of so many bands today. This fact, combined with the outstanding musical ability of these men, make this album a "must have" for your collection.

If you love rock in all its forms, from blistering guitar work to soul searching ballads, don't pass up the second offering from New York club band Law and Order called *Rites of Passage*. After playing their debut album *Guilty of Innocence* to death and seeing them live in several overcrowded and acoustically poor metal clubs, I was waiting for this one. And I was not disappointed! *Rites of Passage*, aside from being a Hi-Fi spectacular, is a wonderful 52 minutes of Rock and Roll. The songs will get your toes tapping just as easily on a $30 clock radio as they will on a $30,000 reference system (which I can attest to myself, though this album is far more deserving of the latter).

From the R&B inspired "Why Would You Lie To Yourself" to the bluesy acoustic work of "Mary" to the hard rocking "Dawn Over Zero," this album runs the gamut of rock styles. Lead singer Shane has the ability to pull off vocal miracles with as much soul as anyone could muster. Meanwhile, guitarist Phil Alloca plays masterfully whether it be a ballad or a balls-to-the-wall rocker, and the rhythm section will hit you like a 10 lb. sledge hammer to the gut. And if that weren't enough, having a veteran producer like Mack (E.L.O., Brian Eno, Todd Rundgren) twisting the knobs in the studio is akin to having Caroll Shelby tune your car.

On my personal odyssey for quality metal, I have come across quite a few albums that are musically feeble and deal with subjects that can generally be described as inane. It is quite refreshing to find material not written for prepubescents, or people who would rather not be bothered with such tiresome chores as thinking. Law and Order provide the listener with thought provoking and timely matters such as the drowning of our population in its own filth ("Funeral for the Good Mother"), people kneeling in praise of the almighty dollar ("Is Freedom Slavery?"), or the problems of racial tension, found in "The Plague of Ignorance": "So the white man who's a bigot/Hurts a black man out of fear/He's too blind to see the truth/While another black man breeds hatred/Using racism as his tool/He thinks he needs no excuse."

Law and Order is a rock band with something to say. And they have the musical talent to back that up.

Jon Siebert

Johnny Winter,*Let Me In*
Producers: Dick Shurman & Johnny Winter; Engineer: David Axelbaum Point Blank/Charisma 917442

[This review is guaranteed to offend a lot of rock guitar fans. So be it. As Hy Kachalsky told us when he started this magazine, "The Audiophile Voice is about passion," and Barry is nothing if not passionate about his guitar heroes. What he does here is clearly more than record reviewing; I see it as akin to a defense attorney making a strong plea for his client in front of a jury (and YOU, fellow audiophiles, are the jury). In the role of fiery lawyer, he feels it necessary not only to make a strong case for the truly awesome but underrated talents of Johnny Winter, but also attack the abilities of several good, honest musicians. Personally, I don't see the need to paint Stevie Ray Vaughan and others with a tar brush in order to portray Winter in a better light. But Barry knows his stuff, and he feels passionate about it. That's enough for me. As the editor of the Rock Block, I get to play judge, and I say, "Let the testimony be heard."—Mark Block]

This is not the case of an excellent guitar player. This is not the case of a great guitar player. This is the case of a virtuoso—the Yasha Heifeitz, the Gerry Mulligan, the John Coltrane, the Yardbird Parker, the Louis Armstrong of his genre. Let me state it flat out without any equivocation, without any gray area, and without any uncertainty: Johnny Winter is the greatest blues guitar player alive today. Period, case closed.

I'm incredulous. I'm dumbfounded. I can't believe that there are so many guitar players out there who play basically within Johnny's genre and who receive tremendous accolades, adulation, awards, money, and praise from their multitudes of fans, yet these players are at best marginal. I'm talking about your Stevie Ray Vaughns, your George Thorogoods, your Robert Crays, your Billy Gibbonses, your Dickie Bettses, and, yes, your post-*Layla*, brain-dead Eric Clapton. It's amazing that Johnny goes unnoticed—totally amazing.

This was underscored recently by a *Saturday Night Live* I watched wherein Annie Lennox was the guest musical act, and Johnny Winter was relegated to backing up G.E. Smith, the lead guitarist of the Saturday Night Live Band. G.E. Smith is an incredibly poor guitar player. In fact, Johnny had to play one of his trademark songs, "Good Morning Little School Girl," at a dirge tempo so that he would not show up the inferior G.E. Smith.

Let us not forget that Johnny Winter played Woodstock. *[So did Sha-Na-Na.—Da Judge]* Let us not forget that Johnny Winter was one of the most popular acts at Bill Graham's Fillmore East. Let us not forget that Johnny has not had a commercial album since 1974's *John*

Dawson Winter III. In the meantime, he has devoted all his energies to playing nothing but the blues. Johnny has won a Grammy for producing Muddy Waters, and Johnny has had many, many, many outstanding blues albums on both Blue Sky and Alligator, and now on the Point Blank/Charisma label.

A true artist is measured by dedication to an art form without selling out. A prime example of the sell-out artist is George Benson. Johnny is one of the few guitar artists (the only other one who comes to mind is John McLaughlin) who constantly improves in his art. There are so many guitarists out there who reach a level and then coast for the rest of their careers. Since 1969, or rather 1968, going back to the *Progressive Blues Experiment* album, then into the first album on Columbia, up through all of Johnny's releases through the '70s and '80s, and up until now, there has been a constant progression in musicianship and production and song selection that sets him apart from almost anyone out there playing blues.

There was some time when I had not listened to Johnny—this is going back to the early 1980s. I had pretty much bought all his records up to *Nothing But the Blues* on Blue Sky, but then didn't listen to him for a few years until I picked up *Guitar Slinger* on Alligator Records. The time period was maybe two or three years—or four or five, I don't really recall—but the quantum leap in guitar playing was blinding. When I heard *Let Me In*, his latest album, I nearly fell off my seat. The guy is almost 50 years old, and doing the best playing of his whole life. His singing is outrageous; his musicianship is light years beyond anyone out there in the blues world. I hope it's not the issue that he can only be appreciated by those who have played, but maybe only those with an educated palate can appreciate such a fine wine as Johnny Winter.

I always come back to compare Johnny with Eric Clapton. Johnny and Eric were my guitar heroes back in the '70s. I thought *Layla* was an outstanding example of what guitar playing is about. At the same time Johnny's records on Columbia were very popular, and also set the standard for what blues guitar playing is all about. After listening to *Let Me In* I can say—and I have heard all of Clapton's material since *Layla*, including the bungled sessions from the Royal Albert Hall, which put me to sleep within two minutes—I can safely say that the material on *Let Me In* is such that not only could Clapton not play it today, he could not even think of playing what Johnny plays. That is, if Clapton's brain could be MIDIed to a guitar synthesizer, he could not even direct it cerebrally into the synthesizer. *[Order in the court. One more outburst like that and I'll clear this courtroom. Ten minute recess.—D]]*

Now, to the release, first with the more rock oriented numbers. On "Barefootin'" Johnny plays slide, and plays something that is not heard very often anymore: the classic blue note. A blue note, technically speaking, is the flattened 3rd and flattened 7th on the diatonic scale, but the blue note in its true form, captured by the great blues musicians, is the note between the half steps on the diatonic scale—that is, the notes between the white and black keys on the piano, or the notes between the half steps. In Johnny's slide work on "Barefootin'" you can hear the blue notes.

On "Hey You" Johnny shows his affinity for the music of Dizzy Gillespie: He quotes "Salt Peanuts" on the second chorus. The piece features four outstanding choruses of straight-ahead guitar playing, and also features Johnny's classic ascending and descending chromatic chord soloing.

Johnny pays homage to all the great rockers of the '50s—Chuck Berry, Duane Eddy, Link Wray, Percy May-

field, Little Richard—in the tune "Sugaree." It has an interesting unison run with the bass player in the vocal chorus, and it also features Johnny playing impeccable fast runs in an outstanding solo.

Does Johnny slyly acknowledge his axe on the cut "You're Humbugging Me"? He's never been a Fender man, always playing Gibsons, and the Gibson pickup is called the "Humbucking" pickup. It's a double-coil design which creates the sound of a bell tone, in contrast to the Fender twangy tone. Musically, what can be said about this cut that won't sound redundant? The album is full of blinding, ridiculous soloing, and this is certainly a prime example of the master at work.

Would you believe that Johnny Winter and Wolfgang Amadeus Mozart have something in common? Both are masters of counterpoint. How many guitarists do you know who can play single note leads in counterpoint to their singing? I'm not talking about what George Benson does—that is, singing and playing guitar in unison. I am talking about singing and playing in counterpoint. Think about how many guitarists can sing "Jumping Jack Flash" and play the Keith Richards lead lines and riffs at the same time.

Counterpoint has been Johnny's forte for his whole career, and it's best exemplified on a tune called "Got to Find My Baby." Very syncopated, it's one of the hippest tunes on the whole album. The bass player is doing something that's not quite in sync with the drummer; the drummer's doing something that's not quite in sync with the bass player; and Johnny's doing something that's not quite in sync with everybody else. It's reminiscent of The Who, but it joins together, it swings, and it's real, real good blues. And, of course, you have the counterpoint playing. The soloing on this tune is beyond hip; Johnny really stretches out playing over the syncopated vamp.

Closing out the six songs that I consider to be on the rock side (although they are certainly influenced by the blues) is the tune entitled "You Lie Too Much." This is a medium rock beat with a blues structure, and it features a B. B. King-style introduction. On Johnny's last chorus he strings together a brilliant flurry of exquisite sixteenth notes, which are impeccably played with great technique and tremendous taste.

I want the reader to realize that the thrust of my review is centered on Johnny's guitar playing, and if I'm sounding too heavy with my emphasis on the technique, let me tell you that Johnny plays with a tremendous amount of feeling, and a tremendous amount of pathos and passion. This is, in my view, the hallmark of all blues players. They've got to play with feeling. Of course, many bluesmen out there have the feeling, but their playing ability and their singing ability don't measure up. This concerns people like Bob Dylan and bluesman Buddy Guy, who, although they have great feeling, can't play for shit and can't sing for shit. *[Mr. Cooper, I will not stand for such profanity in this courthouse. Please restrain yourself. You may continue.—DJ]*

Not only is Johnny a master on his instrument, he's a master singer as well. Even his diction is impeccable. Unlike Bruce "Mumbles" Springsteen or Mick "I Cannot Understand a Word You Say" Jagger, you don't need a lyric sheet to follow Johnny Winter; his diction is right on the money. The guitar playing, of course, is masterly: There are no miscues, there are no misfretted notes, there are no flubs. Folks, this is not Jerry Garcia. This is a master.

Now for a discussion of a tune that I consider to be neither blues nor rock,

but unique unto itself. How many artists out there can create true musical onomatopoeia? On "Medicine Man," Johnny double-tracks the slide guitar. Unlike other slide guitarists, such as the boring Bonnie Raitt and others who have come before her who play with either a Coriciden bottle or a glass slide on their ring finger and who play with altered tunings, Johnny plays with a metal conduit pipe on his pinkie, thus freeing up his second, third and fourth fingers to do fret work.

Furthermore, he can play in standard tuning or in altered tunings. He can, unlike other guitarists, slide on the bass strings—that is, the fourth, fifth and sixth strings of the guitar—while most commonplace slide players concentrate on the first, second and third strings. Also, Johnny does not concentrate his slide-work in the area of the guitar neck centered around the 10th fret and beyond. Johnny covers the entire guitar neck, and on "Medicine Man" he slides all the way down to the nut on the bass strings. On a technical level, this is extremely difficult—but dig the sound, and dig, dig the feeling.

Did I mention onomatopoeia? With Johnny's double-tracked slide you get the musical illusion of Aboriginal American Indians playing their tom-tom drums in a setting of a great meeting of the spirits with all their Indian magic. You really do hear the tom-toms of the Indians with Johnny's slide work.

The album's title track, "Let Me In," is a classic blues double-entendre, where Johnny says "Woman, I don't believe you still love me, 'cause if you did, you would sure let me in." This tune is a throwback to Johnny's days on his *Progressive Blues Experiment* album and on his first Columbia release where Johnny showed his acoustic side. The instrument of choice is a National Steel standard guitar—a dobro—which is a resophonic guitar with a metal resonator. Most dobros feature a wooden body, which gives it a little sweeter tone, but Johnny favors the steel. This guitar is designed for slide playing, and Johnny makes great use of the slide idiom here. The tune is double-tracked, with Johnny playing both guitars plus a slap rhythm. It exemplifies Johnny's incredible technique and his mastery of the classic Delta blues slide tradition.

Continuing on with the dobro play, Johnny has a tune on this album which totally surprised me. It's been a while since Johnny played jazz. The last jazz tune that I could think of is "I Hate Everybody" off *Second Winter*. On "Blue Mood," Johnny plays the dobro again, but not slide. Johnny sings, accompanying himself with hip jazz chords, then adds a solo that's really something else. Triplet runs and chops galore on a very, very difficult instrument to play. A point of reference: Johnny is not the type of guitar player who strings together riff upon riff upon riff. All his solos tell a story, very much like a competent jazz player. More on this later.

As mentioned before, Johnny has had an association with the great McKinley Morganfield, better known as Muddy Waters. In deference to the pen-knife slide playing of Muddy Waters, and going back to similar tunes in the past, most notably "Mean Mistreater" off Johnny's first Columbia record, the tune "Good Woman" is your real gut-bucket, down-home Southern blues. It's quite a tribute; you can feel Muddy in this tune.

Many years ago, Johnny Winter won a Chuck Berry contest—actually, a Johnny B. Goode contest, where he played "Johnny B. Goode" better than any guitar player in all of Texas. Any time you see Johnny Winter in concert, he always features "Johnny B. Goode." There is no one alive or dead who can play the tune like Johnny Winter. On "Shame, Shame, Shame," Johnny

shows his Chuck Berry roots by featuring a "Memphis" riff, and adds some good soloing very much in the Chuck Berry idiom. It's something that is quite common among devotees of Chuck Berry to take what Chuck did and lift it to another plane. The only other guitarist who could do it as well as Johnny Winter was Jimi Hendrix.

The piece de resistance of this album is actually two songs. The album's opening tune is "Illustrated Man." If anyone has seen Johnny Winter recently, he looks very much like one of those old wrestlers from days gone by, completely tattooed, as he says, "from his head down to his toe." A dragon on his chest, Texas on one arm, the Lone Star on the other arm—he's full of tattoos. The lyrics of "Illustrated Man" are self-deprecating and hip in a very comical way, but the soloing . . . I'm a Johnny Winter nut, and this tune buried me right into the ground.

I was prompted to replay "Be Careful With A Fool," an extended major key blues song off Johnny Winter's first Columbia album. At that time I thought it was the best thing around in terms of blues soloing—even better than Clapton's "Crossroads," and on a par with "Sitting On Top Of The World" and "Politician." But "Illustrated Man" is such a quantum leap that I'm still baffled. The soloing is, and I hate to use the term again, blinding. The quality of the vibrato still sends chills down my spine (and I've played the song about 50 times). The tune has three guitar choruses and Johnny doesn't repeat himself; he doesn't get boring, he doesn't get redundant, there are new ideas on top of new ideas on top of new ideas. A storytelling in soloing.

This is the case of a man possessed—possessed of ultimate technique—and the pathos, the passion, the romanticism, the sheer *balls* of this guy shines right through the technique. On this album, you don't just get one chorus of soloing per tune. You get three, four choruses of solos, and you get many out solos, too (that is, when the vocal is finished, you get an out chorus or two). It's absolutely incredible.

In October of 1991, my dear father passed away. He died of terminal prostate cancer, and was on his death bed in a hospital for three months. When I got the news, all I could think about was that he lived a very hard life, worked very hard, and then he died. I think of my father when I hear Johnny's "Life Is Hard," for me the most poignant, heart-drenching, soulful, beautifully romantic blues on the album. It's the only minor key blues on the album—normally a Johnny specialty. If "Illustrated Man" is a quantum leap . . . well, let's say this tune is a few parsecs beyond anything he's done in the past, and is hundreds of parsecs beyond anything anyone else is doing in the idiom today.

Johnny is one of the few blues and rock guitarists who, at this stage in his career, is very close to equaling the artistry of the great jazz players such as Sonny Rollins. (Clapton, on the other hand, is just putting strings of riffs together.) Each succeeding chorus is built upon the prior chorus; they build, they convey new ideas, they reach you in a different emotional manner. They bite into your soul every time a new chorus is rendered. When Johnny hits the five chord in the one-four-five blues progression, that's the time where he shows his true accomplishment. His five chord is emotive, it's climactic. It brings you right into his soul. It's the mark of a blues master.

This tune also features a guest appearance by the great Dr. John, Mac Rebenack. It's highly unusual on a Johnny Winter record to have *anyone* taking *any* kind of solo except Johnny. Yes, he's had Rick Derringer; yes, he's had his brother, Edgar Winter; yes, he's had James Cotton. But here, unlike the oth-

ers, Dr. John is not merely an add-on, a scrub to pinch-hit when the game is meaningless. Dr. John sets the mood for the entire tune. Johnny himself is so passionate that he reminds me of the great B. B. King—that is, when B. B. *sings*. Nowadays, B. B.'s guitar playing is not even worth listening to; he's made a career of playing one note—the B on the second string, 12th fret—for the last 15 years. But Johnny's feeling is something else to behold.

Although this review may sound very technically-oriented, I assure you I wouldn't listen to any blues man who was all just pyrotechnics. What I'm trying to say is that Eddie Van Halen couldn't play a lick on this album, because it would sound like showmanship and not musicianship.

In closing, I want it to be known that I am not a shill for Johnny Winter or his record company or his management or anything like that. If I thought this album stunk, I would tell you it stunk. Notwithstanding the fact that I'm a big-time Johnny Winter fan, I've heard every album Johnny's done, and I own most of them, I would say that this is one of the best albums he's ever done. I still think Johnny's best song is "Memory Pain" (by Percy Mayfield) from *Second Winter*, but when you hear "Illustrated Man" and you hear "Life Is Hard" and you hear "Got To Find My Baby," well, this album is right up there.

I've been very frank in criticizing one of my all-time heroes, Eric Clapton; it's an honest opinion. I think that Eric hasn't had a meaningful solo since the *Layla* album. (Making hundreds of millions of dollars on shlock singles could definitely make a person lose their blues.) Johnny Winter, on the other hand, is the real thing. I guess he will never attain tremendous commercial success because: A) he's almost legally blind; B) he's an albino and looks very weird; C) he doesn't wear heavy metal attire; D) he doesn't put out videos; and E) he hasn't sold out. In other words, he doesn't produce crappy music.

The reader *[Jury]* may understandably ask, "Who is this guy Barry Cooper, putting down Clapton, putting down all these great guitar players, pretending to know so much about guitar playing and Johnny Winter?" Well, I do have a *curriculum vitae*. I have played rock and blues guitar for 17 years, both on an amateur and professional level. I have played guitar in a jazz band for about six years. I know what it is to play the guitar well. I know how much technique and dedication is required to play what Johnny plays at this level. I know what it takes to improve, year after year after year, in an idiom that can be limiting because of its simple chord structure. But on this record, every tune is a bit different from the other tunes; every tune is played differently, felt differently, and attacked differently on the guitar playing level.

I have also played several instruments professionally. I know what it is to be a musician. I know what it is to play with emotion. I know how hard it is to play with skill and technique. Johnny is captivating, exhilarating; If you can appreciate a true artist who not only feels the blues, lives the blues, conveys the blues, who can sing great, who can play better than anyone in the world in this genre, and who really can convey the *feeling* at the heart of jazz, then dig Johnny Winter. Folks, Johnny Winter is the greatest blues player alive today, bar none.

My editor also asked me to mention some of the audiophile qualities of this recording. Although my system is not at the same level as that of Lars—that is, I cannot walk between the instruments and see ten feet wide and ten feet deep—I will say that this album is superbly recorded. The levels are perfect; the vocals are perfect; the guitar

and the bass and drums are perfect. This album does not mask the rhythm section; it's there to be heard and appreciated.

Anyone who hears this album and wishes to dispute my comments can contact my editor, *[Judge]* Mark Block. I will gladly return the call and discuss the issue whole-heartedly. *[Ladies and gentlemen of the jury, I now direct you to listen to this recording and then return your verdict.]*

I want to dedicate this review to the loving memory of the late Hy Kachalsky, the founder and president of this Audiophile Society. Hy was a wonderful, wonderful man who opened his arms to me and welcomed me into this wonderful organization. I also want to thank and acknowledge Arnie Balgalvis, who came to my house, went down into my dedicated listening room, listened to my system, and said, "Hey, this guy belongs in the audio club."

Barry Cooper

k.d. lang, *Ingenue*
Engineers: Greg Penny & Mark Ramaer. Producers: Greg Penny, Ben Mink & k.d. lang.
(Sire/Warner Bros. 9 26840-2).

Hiding behind sexless initials, singing with a vocal style created in the image of Patsy Cline, cropping her hair to a mowed down androgyny (which gave her the look of a butch Wayne Newton), k.d. lang seemed to many like a woman with something to conceal. Now out of the closet and out of the Country and Western scene, lang is venturing into virtually unexplored pop territory.

Although one has always been tempted to treat her as some sort of bizarre Country and Western performance artist, fans have known for years that she's one of he best, most stirring singers in pop music. You wouldn't know it from her latest effort, however. No belting, very little emoting, not even much apparent effort. Yet this new-fangled, laid back, low-key approach has much to recommend it.

The songs are, daringly, all lang originals; no covers to hide under. In a terrific interview with Linda Kohanov in the April '92 *Pulse!*, lang admitted to having trouble singing this new material at the early recording sessions: "I was flat, and that's not an easy thing to deal with when you have an ego. Then I realized I was still singing from the pain of being a writer, singing from underneath, from the pain at the bottom, and it was pulling my tone down. I realized that I had to sing from an overview, with a sense of optimism, and that brought my voice back up. Singing is so esoteric, so complex. Only a small amount of it is technical. It's sexual, sensual, mental, spiritual." The voice on *Ingenue* is new: Imagine Julie London crossed with Roy Orbison. Androgynous perhaps, but strangely sensual. Languid but emotionally stirring. And the song style is, pardon the critical lapse, indescribable.

At this point I don't think I need, in fact, to describe the style, as several cuts from this CD have been nominated as top 1992 Audiophile Reference Tracks of the Year (ARTY), female vocal category. If you haven't heard this CD you haven't been hanging around enough hi-fi rooms. Remember *Diamonds and Rust*, *Ricki Lee Jones*, *What's New? Ingenue* is right up there. Will it catch *Famous Blue Raincoat*? History will be the judge!

The lyrics, all by Ms. lang, often aspire to greater insights than are achieved—which is, I suppose, another way of saying they're sometimes a bit pretentious: "Maybe a great magnet

pulls/All souls toward the truth/Or maybe it is life itself/That feeds wisdom to its youth/Constant craving/Has always been." The more you think about it the less profound it becomes. In the above mentioned interview she mentions that she loves the line, "Can your heart conceal/What the mind of love reveals." I don't get it.

I don't want to be too hard on Ms. lang's songwriting, because this material is intelligent, and there are legitimate insights to be found here. Her ruminations on longing and loss can be poignant: "I often wonder/Is it so/The lessons of patience/Are learned slow/And earnings of labor/May never show/But still somehow thrives this love/Which I pray I'm worthy of/Still somehow thrives this love."

While k.d. shows herself to be an authentic, solid songwriter, it is Ben Mink's music that is even more of a revelation. Lilting melodies, sensuous rhythms and unusual orchestrations predominate. Mink, a Canadian composer and member of the band FM, wrote the music, did the arrangements and played many of the instruments. His most brilliant achievement is the string sound; I've never heard ensemble playing of this sophistication and complexity on any other pop record—and there's an interesting reason why. Of the typically lame violins we're all used to, Mink had this to say to *Pulse!*: "It's a real cliché, but it's often what you get when you hire an orchestra. There's no personality to it. On *Ingenue* I played all the string parts except for the cello, so I could follow myself in an overdub situation. If you were trying to teach an orchestra all the little nuances, the slides and things I did on this album, it would take forever." Let's hear it for the studio.

Mink's arrangements are so good I often listen to this album for the instrumental details without really paying attention to lang's vocals. Upstaging the best set of pipes in pop is quite a trick.

Mark Block

Tori Amos, *Little Earthquakes*
Engineers: John Beverly Jones, Paul McKenna, Eric Rosse, John Kelly, Ross Cullum, Dan Nebenzal, Paul Corkett, Steve Williams. Producers: Davitt Sigerson, Tori Amos, Eric Rosse, Ian Stanley. (Atlantic 782358-2).

Pop music doesn't get much more adult than this. Which brings up the question: At what point does contemporary pop music become too adult to be called rock 'n' roll? Until I figure out the answer to that, rest assured that Little Earthquakes can be found in the rock section of your record store. And seek it out you should.

Tori is an expatriate American in London who has made one previous recording (I know nothing about it other than it was a critical and commercial bomb). I'll assume that she was trying to be something she's not on that first effort, and that she learned her lesson well, because this CD is thoroughly mature and artistically self-confident (maybe too self-confident). The music is easy to categorize—think Kate Bush, Sara McLachlan, Suzanne Vega, etc.—but Amos suffers unfairly by comparison; her music really is unique.

To describe her as a performer, once again many comparisons spring readily to mind: the feminist slant of Sinéad O'Connor or Patti Smith; piano playing that ranges from Laura Nyro to George Winston; the drama and sexiness of Kate Bush; the eccentric rock warbling of Stevie Nicks combined with a vibrato approaching Buffy Saint Marie (though just

shy of Yoko Ono); the autobiographical, deeply felt lyrics of Joni Mitchell; the songwriting sophistication of Kurt Weill. Sounds either like the genius of the century or the most godawful mishmash imaginable, right? Well, it's neither, and the sum of the parts is a package that sounds unexpectedly yet undeniably original.

I wonder: Is Amos difficult to work with? Why does an artist need eight engineers and three outside producers? The sonic results are a little inconsistent, but not as bad as you would guess. My main criticism is a little upper midrange grain and edginess. Interestingly, Amos' record company released a five song EP disc called Crucify (Atlantic 7 82399-2), which contains two of the songs from Little Earthquakes, "Crucify" and "Winter." The former is a remix, but the "Winter" track isn't, yet it sounds smoother and softer on the EP. Bits is bits? The other three cuts on the EP are covers of tunes by the Stones, Led Zep and Nirvana, namely (can you guess?) "Angie," "Thank You" and "Smells Like Teen Spirit." It's worth a listen.

The masterpiece on the album is the above mentioned "Winter." Amos uses a mesmerizing New Age-style piano theme to support a poignant recollection of her relationship with her father: "You say I wanted you to be proud of me/I always wanted that myself/He says When you gonna make up your mind/When you gonna love you as much as I do/When you gonna make up your mind." If you're moved by Joni Mitchell's search for that river to skate away on, then this song will wipe you out.

Her excursions into rock are a bit ugly, and she takes herself too seriously much of the time. Even her two "humorous" songs make one wince rather than laugh: "Happy Phantom" is about dying cheerfully and "Leather" about sado-masochism. What could be more serious than joking about sex and death?

For someone with hard-rock pretensions, her singing style is very theatrical and show bizy. Her flair for the dramatic probably comes from her background as a pianist in gay bars, where she played as a teenager (her father dropping her off and picking her up). She sells her songs hard, occasionally going over the top into silliness and pretension. I've seen her on MTV—playing the piano sideways, legs spread, mouth in an open sneer, eyes challenging the audience—and I find that her self-confident theatricality is, when viewed up close, off-putting rather than sexy. Hers is a charisma that works best when reaching out across distances—into the back rows of the audience, or beyond the recording studio and into your listening room.

I've gotten much pleasure from this album, but a question lingers in my mind: Will the drama class mannerisms eventually become as annoying on record as they are on film and in concert? Tori: Your music may be adult, but you can't be truly grown up until you calm down.

Mark Block

XTC, *Nonsuch*
Producer: Gus Dudgeon. Engineer: Barry Hammond. (Geffen GEFD-24474).

My first casual listens had me thinking that "Holly Up On Poppy," one of the most immediately catchy songs on XTC's latest offering, was about a drug addict. "What a pretty little melody they've given to a song about heroin addiction," I thought. I admit to being literarily unattuned to rock lyrics; the first ten times I hear a

song the words might as well be nonsense (of course, with pop songs of the last forty years, that often turns out to be the case.) Eventually it became clear that the song was about a little girl playing on her dad's stomach. Still, I was cynical: Maybe there's a double entendre à la "Puff The Magic Dragon." When I finally read the lyric sheet, I was embarrassed almost to tears; this is really quite a beautiful, innocent, joyful, moving little song. "Everytime I look at my watch/I'm reminded we are poor in hours per day/Every second spent with her's a bulging wallet/Overstuffed with angel's pay—laughter." Maybe I've been inhaling something.

If you haven't been turned on to Andy Partridge's brilliant band, Nonsuch might just do it for you. Carrying on in the post-turned-on Beatles tradition, XTC albums burn with scalding wit, biting irreverence, effortless invention, and almost frivolous complexity. And Nonsuch is up there with XTC's best. (My friend Steve—a proud XTC fanatic—advises me that their previous album, Oranges and Lemons, is the real killer. Sonically, however, it's a washout. I recommend the Todd Rundgren produced Skylarking.)

The band has been around for quite awhile—they were originally formed as a psychedelic band called Dukes of Strotosphere—and their music has become pigeonholed as grist for the critic's mill rather than fodder for the pop DJ's playlist. The rock fan (like myself) is therefore more likely to read about them than hear them. So, for those unfamiliar with their sound, a consumer warning: XTC may be the closest thing we have now to the Beatles in their heyday, but Andy Partridge's vocal abilities lie somewhere between Ringo and George (you get used to it). One other thing: several of the tunes, "That Wave" being the prime offender for me, are conceptually interesting but (at times) unpleasant to listen to. If that turns you off, my condolences. You're missing something great.

I have mixed emotions about the sound of this album. Michael Fremer of The Absolute Sound has already condemned it for being too digital and bright in the highs, while our friend Ken Kessler in Hi-Fi New and Record Review thought the sound was "a sonic treasure." Fremer's absolutely right, but he overlooks the magic that the engineers have managed to conjur up despite the flaws of the Mitsubishi digital recording system. It's a matter of priorities: My aural nose isn't as sensitive to digital doo-doo as his. This is one of those recordings that sounds a little thin and flat on the radio and on a mediocre hi-fi, but on a high-end system it's revealed to be surprisingly transparent—full of depth, texture and detail.

The miking is unusually realistic for a pop recording; there's distance here—no instruments in your face, and few direct feeds to the mixing board. The music seems to travel through real space. I almost said "real air," but this digital recording has, unfortunately, no real air to speak of. Cymbals are smeared and lacking in their true metallic essence. Highs are dry, and boosted in level to compensate. Too bad; the recording otherwise verges on greatness.

The production itself is complex, full of engineering tricks, and thoughtfully attuned to pop music masters of the past. Listen to "Then She Appeared" for a close approximation of the greatest Sgt. Pepper cut McCartney never wrote. The layered strings, the reversed instruments, the complex orchestration, the familiar McCartney bass riffs—it's really a nice a homage, but at the same time a work of original pop music art.

Mark Block

The Graham *1.5t* Tonearm

Earle Stevens

In many industries, there exists a limited number of products that define the field. Photography for example: What names spring to mind? Leica and Nikon perhaps? Normally it takes more than just good engineering and design; it requires the test of time to qualify the defining product. But in the arena of analog record reproduction—in its twilight—there suddenly appears a proliferation of new products that not only define but redefine the state of the art. A virtual Golden Age attends the wake of vinyl. Most of the players are new: With the exception of SME, any firm that has been around a decade is considered an old hand. I believe that Bob Graham should be considered, in this context, a player on the edge.

Gosh, aren't we analog moldy figs lucky? You bet! Those were the thoughts that passed through my mind as I signed the receipt for the UPS person. I do not know exactly what I expected upon removing the shipping packaging, but I was delighted to find a point-of-sale box with "open here" instructions, a logo, and item identification. The hallmarks of a true, finished product. The custom cut foam lining included provisions for an additional arm tube and a junction box, which provides RCA jacks for interconnect cables. I had chosen to employ a dedicated tonearm cable, a Straight Wire MicroLink, which had done excellent duty with my Grado Signature arm.

This Graham 1.5t was trimmed in satin gold. Also available is polished gold and satin or polished chrome. The 1.5t is a beautifully finished product demonstrating first rate industrial design. Not only is this a top of the art high-end realization, it looks it, too.

Packed with the arm was a kit of tools to gladden the heart of this old tweaker: quality gear from Xcelite and Bondhus; a nifty pair of tiny tweezers by Uncle Bill (an identical pair lies in my fly tackle bag); and an extra nifty dual power magnifying glass from Edmund Scientific. Also included are several jigs used in the setting up, which will be discussed later.

The instructions (ten pages, "reading time: 14 minutes," boldly proclaimed) state that a standard SME cutout is required. However, previous conversations with VPI Industries developed the information that there was available for the HW-19 Mk. IV a special Graham/SME arm board. This rare beauty was ½" thicker than the traditional item and boasted a modified opening within the standard mounting. This arrangement allowed better utilization of the 1.5t's vertical tracking angle (VTA) adjustment, and due to its thickness the modified cutout provided more clearance for the cable connection at the arm column terminus. I would suggest that anyone with a turntable graced by a very thick platter check with the unit's manufacturer for their recommendations. It would be a shame to lose any of the flexibility of adjustment designed into the Graham. Now, let's get down!

As I had the new VPI arm board at hand, priority one was assembly. Four bolts, washers, and nuts were inserted and the arm base was installed. A hard foam insert had been placed at the bearing housing clearance point to protect it from shipping and assembly damage. Leave it in until the arm board is fully mounted and tightened down, then pull it out. Now install the arm tube. It just screws on, but follow the instructions, as cross-threading this connection is not covered by the warranty.

Remember those jigs? It's time to use the first one, the Alignment Spindle Adapter, which is fitted over the turntable spindle. Loosen the Overhang Locking Screw located on the back of the movable base and turn the adjacent Adjusting Knob until the "key" hole in the headshell just slips over the alignment pin on top of the Spindle Adapter. Finger tighten the locking screw with the provided tool and you are ready to install your cartridge.

On to jig number two. This is the one you're going to love—the Alignment Device. Dismount the arm tube, use the supplied gold plated brass hardware, and loosely mount your cartridge. I did mine comfortably sitting at my well-lighted kitchen table on a clean, white towel. Lay the arm tube upside down on the matching pins in the jig, and flip the plastic template over the stylus. Using the magnifying glass, align the stylus tip to either the standard "Seagrave/Baerwald" position, which minimizes distortion on the inner and outer groves (see *Audio*, January 1980, Martin D. Kessler and B. V. Pisha) or the "Loefgren" position, which yields a lower average distortion. Both are clearly marked and you can easily experiment with them to decide your preference. Accurate, repeatable results are possible—for the first time—to users of pivoted tonearms!

Reinstall the arm tube (careful with the threaded connector), then set the tracking force. A separate gauge is required, but the Shure is readily available. The counterweight is moved by a thumb screw and once set will not go out of adjustment.

Azimuth is corrected by rotating either or both of the outrigger weights, which also self lock. I used my Audio-Technica AT 6020 Stereo Cartridge Analyzer for this function. Spot on and repeatable.

VTA is adjusted with a fine threaded thumb screw located on the top of the arm base structure. There is a pointer/scale assembly that allows repeatable settings, and a separate locking screw. The VTA can be adjusted while playing a record, though I would council caution during such a maneuver.

At this point the silicone damping fluid is added with the supplied syringe; again exercise care, as this stuff is a bear to clean up! Set the Anti-Skate adjustment and you are ready to pass go and collect $200 dollars. If you haven't gotten the idea that this is a walk in the park, perhaps this will help: From the time I returned the UPS person's pen until I collected my two hundred dollars, exactly forty-three minutes had elapsed. Reading time included. I can change cartridges in under twelve minutes and it only takes a few minutes to change the stylus alignment. I am currently using the "Loefgren" geometry.

Now for something completely different: Let us consider the mechanics of a unipivot design.

Conventional pivoted tonearms require at least three bearings, some use four. Two are needed in the horizontal plane to control vertical motion and a minimum of one in the vertical plane to allow it to pivot. These bearings have to be pre-loaded to a precise level so they are able to apply the loading force over as large an area as possible to insure low friction and smooth motion. The "smooth" bit is the hard part; you must eliminate play and prevent chatter. This requires a precise, manual adjustment that would make a tweak look lax, and materials that can live a long time without maintenance.

A unipivot only requires one bearing—a precision point sitting on a tempered surface and bathed in a viscous fluid—so there is no need to perfectly match the adjustment of multiple bearings. Un-

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less broken, it cannot go out of adjustment. Do not get this wrong: The uni needs precision design and exotic materials, too, but once it is right it stays right. In the case of the Graham 1.5t, the "t" stands for Tungsten—as in tungsten bearings—which permit the load to top the 180 tons per square inch point (yes, 360,000 pounds). Hey, it impressed me! This sucker has no play; it won't chatter, but we audiophiles will. You still with me? Let us now consider that fortuitous conjunction: the sound and the music.

Listening started with a recording I am very familiar with, *For The First Time*, by the Count Basie Trio (Pablo 2310712). On "Baby Lawrence" the balance was natural, with drive and cohesiveness displayed in abundance. Cymbal playing was clean and clear; in fact, I could hear the rivets dancing! Even the width of Basie's keyboard was clearly discernible.

I cannot hear the arm, listen as I might. The music is just there. To check this out, I exchanged the Clavis for the Clearaudio cartridge, but (discounting the tonal shift) I hear the same presentation: music.

The 1.5t's arrival coincided with a sudden influx of the highly touted OJCs (Original Jazz Classics), a fortuitous conjunction. Placing Art Blakey's *Caravan* (OJC-038) on the old "Capeheart," *[Earl drifts in and out of lucidity these days.—ED.]* the title cut not only revealed the presence of rivets on Art Blakey's drum kit but, more interestingly, resolved the unison playing of trumpet, trombone and tenor. Each individual instrument now occupied a separate location in the soundstage, and it was possible to follow each line independently. On "Skylark," a favorite tune of mine, after the opening bars Freddie Hubbard's trumpet performs an unnatural act on the microphone but does not overpower the delicate brush work of Art. This ditty is best savored at a reduced volume setting.

One of my favorite mis-miked disks, *Music From Marlboro*, (Columbia M35110), features the Mendelssohn Quintet in A Major Op. 18. It's so closely miked you can hear some of the players doing breathing exercises. Wasn't this clear on the tape? It makes you wonder what the engineer and producer were thinking. However, the sense of air and empty space between the performers, heard through the Graham tonearm, makes one realize how close they came to getting it right—that's how good the Graham 1.5t really is.

Now a word from our sponsor, Analog! This is my voice among the many saying put your money where your turntable is. Buy vinyl! Many of the OJCs, which have been given plenty of type in *The Audiophile Voice*, are still available, so don't delay, do it today.

An excellent disk, Duke Ellington's *The Afro-Eurasian Eclipse* (OJC-645), recorded in 1971 and remastered in 1991, is a case in point. It's a vinyl treasure that benefits from the magic performed by a first rate front end. The 1.5t, with a current low output moving coil mated to one of todays well-designed turntables, makes this record almost impossible to analyze, the music is just so compelling, immediate, and involving. The spoken introduction by the Duke (note the natural timbers of Mr. Ellington's well-known voice, which also aids in getting the volume correct) leads into the first movement. The music opens with hard driving brass and insistent percussion. The repeated motifs with progressive variations fade to the silence of the living, not the dead as with so much of digital.

The true value of a high-end system is that it allows the listener a clearer measure of the genius of the musicians and the art of the recording engineer. A

gauge of the fine performance of this arm is that you can enjoy the distinctive sound of the instruments playing individually and together as only the Duke could arrange them. The only disappointment on this recording might be the gongs on side two, which were added after the fact. Follow a single musical line, then find yourself passed on to another as the orchestration progresses—a trick difficult to do with less than great equipment.

I, for one, miss Duke Ellington, but my sadness is lessened by having his memory in my record collection, and by having playback equipment of the quality of the Graham 1.5t to help relive performances past. This is the life reviving force our hobby is all about—music.

There are other great tonearms—the SME Series V, the Wheaton Triplaner, the Air Tangent—but the Graham 1.5t may just be the easiest to install and keep in alignment, and certainly will require far less maintenance than the lateral tracking competition. Its neutrality will also ease its introduction into many systems; it may be the best piece of gear you'll never hear.

Model 1.5t Precision Tonearm. Price: $2,430.00 as tested. Graham Engineering, Inc., 1 Boron Park—33, Burlington, MA 01803. (617) 270-0094.

Associated equipment used in this review begins with groove demodulation by Lyra—The Clavis—and Clearaudio Goldmund. Motivation by VPI HW-19 Mk. IV. Routing by Straight Wire Micro-Link, into a Klyne 7PX Phono Stage via Straight Wire Maestro to a Klyne 6LX Line Stage. The Back End is headed up by an Electron Kinetics Eagle 2c kicking the butt of the speakers of the house, Sequerra Futuresonics Mk. II's via Kimber Kable 8TC. Everything isolated by line filters by Bob Young, a VPI PLC, and a Tice Micro Block. Everything uplifted on little and big pointy things, a slab of stone, butcher block, proprietary cable supports and other tweaky bits to numerous to mention.

Convergent Audio Technologies *SL1* Signature Preamp

Bill Wells

My, oh my! Just what in the world do we have here? Well, it's none other than Ken Steven's latest (and greatest) version of his highly acclaimed Convergent Audio Technologies SL1 preamplifier. Because previous versions of this product have already been covered sufficiently in high-end audio publications, I will not start from ground zero and work my way up to the present. Instead, I will present to you my impressions of this product in its latest incarnation.

Straight out, I'll tell you that the new CAT SL1 Signature preamp is an outright sonic knockout. Also, it is very likely one of the best commercially available preamps in existence today. What started off as Stevens' effort to continually refine and improve his already outstanding SL1 Reference MKII turned into something much more significant. The slight increase in price of the Signature over the last MKII version, from $4500 to $4950, does little to indicate the magnitude of improvement.

As much as I would like to say I discovered the earlier CAT preamp (circa late

1988, early 1989), it would not be an accurate statement. Actually, much credit must go to Michael Gindi, at that time a colleague at *Sounds Like . . .* magazine and now a writer for TAS. Largely due to his constant ravings about the CAT (of which he was already an owner), I became intrigued and interested in pursuing this unit. Besides, having sold my beloved Audio Research SP11 MKII preamp, I was in the market for a new unit. No, I didn't simply run out and buy a new CAT just because Gindi said I should, although he *was* very convincing.

However, after much deliberation, consideration and hesitation, I gave in. Since that time I have owned two iterations of his preamp, and am now a proud owner of his latest version, the SL1 Signature. To date, this newer unit has been in my reference system for a good number of months. Without question, it is Stevens' most significant effort thus far. The Signature is truly the CAT of all CATs and very likely one of the "baddest" preamps available today!

Quite frankly, I was not at all prepared for the level of improvement. Even in the first moments of listening to the Signature I was absolutely shocked. Despite there being a few sonic bug-a-boos (no burn-in, right out of the box, I expected that), this thing was quickly starting to kick you know what and take names! To put it mildly, the sonic improvements of the Signature version over the previous unit(s) are definitely on the high side of dramatic! I don't wish to make any previous generation CAT owners distraught, but the truth is the truth.

When it comes to a comparison of the older versions to the new Signature unit, it's simply no contest! Throughout my numerous telephone conversations with Stevens as he was in the process of researching and developing this latest product, at no time did I ever have a clue as to what to expect of the outcome. In fact, come to think of it, I'm not so sure he did either! Right, Ken? Initially, as Stevens started on this journey, he designated his changes as MKII Improved, or something similar. However, as time went by and more significant advancements were introduced into the design and construction of this new unit, Stevens opted for the more significant (and appropriate) Signature moniker.

The new Signature unit looks essentially identical to earlier versions of the CAT. The faceplate is of standard rack-mount dimensions, with the main chassis measuring 19" wide by 5 ½" high and approximately 12" deep. The word Signature replaces Reference on the front panel. Additionally, the new unit weighs in at a hefty 54 lbs. vs. 28 lbs. for earlier versions. Much of this additional weight is the result of very heavy steel now being used for the chassis. In addition, the chassis now has anti-RFI plating to provide a hum and RF-free operating environment for the circuits. Damping material now lines the inside of the preamp chassis to stop unwanted mechanical resonances that could potentially degrade the sound. Additional floor-borne isolation is provided by four special high-loss viscoelastic feet under the unit.

The power supply is housed in a separate enclosure connected by a fixed umbilical cord to the main chassis, and measures 11.1" wide by 4" high by 6" wide. On the front panel of the main preamplifier unit there are five toggle switches for selecting line/phono, record/normal, mute, etc. Additionally, there are two separate knobs for adjusting balance and volume. A single red LED is on the front panel to indicate when the unit is operational.

As Stevens proclaims in his advertising, the CAT is "For Purists Only." His units sport pure vacuum tube audio circuitry. The power supply is fully regulated with three independent filament sup-

plies to eliminate dynamic compression. Additionally, it contains an isolation transformer to minimize AC line garbage. (Ken is not a fan of the various add-on power conditioners.) Further, the audio power supply is now quadruple cascaded with time-compensated zero-feedback MOSFET subregulators, which are described as providing unequaled dynamic contrasts and soundstage realism. A slow filament power-on provision is used to greatly enhance vacuum-tube life. Along with this, there is an automatic mute that engages during turn-on (30 second delay). The mute provision is also activated automatically when the unit is turned off.

Other significant design features included in this unit are: an extraordinarily quiet high gain phono amp; very low open loop distortion; low feedback ratios; and matched output impedance. The volume and balance controls are stepped military grade solid silver contact rotary switches of very high reliability. Stevens feels these controls far exceed conventional controls, which can be non-linear as well as suffer from poor contact of the wiper on the element. The capacitors used throughout the audio circuitry and power supply are proprietary CAT-designed/manufactured. They are said to be ultra low-loss, non-resonant capacitors, yielding unequaled transparency. The resistors used in the CAT are tightly matched, precision devices for greater resolution, lower noise and minimum unit-to-unit variability. Premium audio wire, Rhodium/Gold jacks, silver solder, and custom designed hermetically sealed selector switches are other features of this unit.

The CAT includes an extra set of main output jacks for specialized audio applications. Phono load jacks are located on the back panel of the main preamplifier chassis, and a package of plug-in resistors of different values are included to optimize loading for moving coil phono cartridges. This set up is very handy and quite easy to use—a totally non-technical, user friendly approach. Gain for the line and phono stages is 26 and 46 dB respectively, yielding a total gain of 72 dB.

In redesigning the CAT, Stevens was interested primarily in improving the dynamics (from top-to-bottom). Ken readily admits that there are other very fine units out there (Jadis JP 80, etc.) that really made him reconsider the performance of his older model in the area of dynamics. He felt that improving resonance and vibration control in the unit was essential.

The chassis and various internal metal parts have been treated extensively with damping material. A new stronger and stiffer glue has been employed on the circuit board to improve structural integrity. These improvements, coupled with a newer, thicker and more rigid circuit board and resonance-resistant capacitors, help eliminate vibrations before they affect the signal. By cutting out vibrations, voltage variations are significantly reduced. By further incorporating new design innovations in both the line stage and power supply, Stevens was able to achieve a level of dynamic improvement that is an order of magnitude greater than his previous designs. Musical lines that much more distinct. Grain is reduced and transparency improved.

Nothing subtle here. With the newer CAT Signature, Ken was going for the explosiveness and throbbing instrumental vibrancy often heard in live music. Based on my experience with this newer product, I would say he has definitely accomplished this goal.

Circuit changes for the new CAT include a reduction in feedback in the line stage. This has improved focus in the new unit beyond the already superlative performance of the previous version. The phono stage has also had a

few changes. The passive portion of the active/passive equalization network has been eliminated. This has meant a reduction in parts, which has shortened (and cleaned up) the signal path.

A quick visual inspection of the preamp's innards now reveals a much neater, cleaner circuit board construction and layout. Ken says that he now has some very competent technicians on-board handling certain critical aspects of product construction and assembly. Judging by what I can see, this certainly seems to be the case. The new unit now has both the look and feel of a very solid piece of work. Plus, the benefits of improved mechanical grounding, insulation and isolation are truly in evidence in this newer unit. Gone now are those nasty mechanical (actually electromechanical) resonances and irritating microphonics. I believe these problems contributed colorations to the sound, which kept the former CATs from achieving this degree of quietness, neutrality, and musical purity.

My other CATs had a tendency to be plagued by noticeably audible microphonics. This made the selection of tubes particularly critical. Stevens was well aware of this problem, and made concerted efforts to equip his units with matched sets of low noise, non-microphonic tubes. Still, the problem remained. I am pleased to report that my experience with the newer Signature version indicates that these problems have been quite effectively addressed (and resolved).

One of the first things I did after installing the new unit was to turn up the volume a couple of notches and tap the main preamp chassis. Nothing! No audible sounds as a result of doing this, just a constant but very low-level tube hiss. In my case, the sound was audible only when up close to the speakers. I repeated this procedure while turning up the volume progressively, and still encountered no problem with microphonics. This tube unit demonstrates how tubes and quietness can coexist.

Quite frankly, I am simply floored by just how dynamic this newer unit is. There is a greater sense of liveliness to the music, which was not as noticeable in previous versions. I'm not talking about anything subtle; this is something very readily apparent upon first listening, and it does not require the very best of recordings to reveal the improvement.

Just as noticeable as these impressive dynamics is the manner in which the new CAT handles transients. The leading edge of transients is now very quick and razor sharp, and is rendered without hardness, smearing, or traces of hangover anywhere. Just pure, bullet-like speed and resolution, which will reward the listener many times over.

On Milt Jackson's album *Mostly Duke* (Pablo CD 2310-944-2), the transient attack of both the vibraphone and piano are really something to hear. Through the CAT Signature, Jackson's rich, engaging style comes through in a superbly convincing manner. Just listen to track #3, "The Summer Knows," through this preamp and you will quickly get an idea of just how good this unit is. The interplay of vibes and piano offers a wonderful presentation of dynamics and transients. The CAT Signature maintains its composure with nary a ruffle.

The tonal balance of the new CAT Signature is also correct. The overall improvements in this new unit greatly contribute to the flow and coherency of the music reproduced through it. It gives no hint that it is an all tube unit. In fact, tonally, it now sounds very linear across the entire audio spectrum. Along with this, the CAT Signature's high degree of timbral accuracy further increases the intelligibility and realism of sounds reproduced through it. Its

neutrality is definitely one of its strong suits.

The treble performance of this newer unit has an enhanced sense of clarity and air, with improved extension, and greater sweetness and delicacy than before. (Please don't get the impression that earlier CATs were deficient in this area. They were not. The newer Signature is simply better). Another area where the Signature's performance picks up from the previous MKII version is in the bass region. Specifically, earlier CATs had a punchy, strong lower bass performance, but the midbass performance was not quite the equal (in either quantity or quality) as the lower bass. With the Signature version this is no longer the case. Now the performance in this area is superbly integrated, while possessing a noticeably higher degree of snap and dynamic punch than before.

Shortly after receiving this new unit (and allowing for a relatively brief warm-up/break-in period), I impatiently grabbed some of my favorite LPs (yeah, a few CDs too!), and off to the races I went. I found that trying to force myself to sit, listen, and take notes, capturing thoughts on this new unit's various sonic characteristics, was out of the question. I was so impressed (and excited) with its overall sonic performance that I just simply wanted to listen, and listen, and listen some more. No note taking for this kid; the new CAT Signature had me in its sonic grasp.

Once I started to be more observant, I noticed that instrumental and vocal images were more palpable than ever. One of the CAT's noted distinctions has always been its outstanding recreation of the soundstage. Now there is a noticeable increase in dimensionality of these images, along with a wonderful sense of liquidity. This is accompanied by a cleaner, clearer focus, which produces a more intimate and up-front rendering of these images. Listening to such vocal wonders as Sarah Vaughan's *Crazy and Mixed Up* (Pablo LP2312-137-2), Johnny Adam's *Walking On A Tightrope* (Rounder 2095), or Nancy Wilson's *With My Lover Beside Me* (Columbia CK48665), I heard layering of music deeper into the stage, and discerned image placement therein. On one of my favorite vocal albums, the Grammy Award-winning 1989 recording *Take 6*, the CAT Signature quickly reveals that little extra about each of the performer's individual placement, movement, performance and style.

Joy of joys awaits you when you play something with plenty of midrange content. Whether it is vocal or instrumental, you will be positively halted by the intimacy and lifelike portrayal of these sounds. One such recording that readily demonstrates this quality is Shirley Horn's superb album titled *You Won't Forget Me* on the Verge/Polygram label. Whether it's Ms. Horn's elegant singing and piano playing, or the very polished accompaniment provided by Toots Thielman's harmonica or Branford Marsalis' tenor sax, one thing is for sure: through the CAT Signature they sound authentic.

Listening to the track titled "Round Midnight" on Kenny Rankin's sonically superb album *Because of You* (Chesky JD63), I was struck by the utterly convincing presentation of voice and acoustic bass. This preamp will simply make you want to listen more and more, and experience the treat of its pristine musical purity.

No, I haven't turned into a "midrange junkie," but wow, when I hear voices rendered like I hear them through the CAT Signature, it is awfully hard not to just want more and more of this type of music. Recently I have had the opportunity to audition some of the latest interconnects from NBS Audio Cables, in particular the King Serpent II and Signature interconnects. The CAT preamp, in conjunction with these cables, produced

some of the best sound I've ever heard in my system. These latest cables exhibit very little character of their own, and allow the CAT to reproduce mids that are superbly full, lush, liquid, harmonically rich and delicious. With this unit in your system, long term listening sessions are definitely in order!

In terms of transparency, the Signature version of the CAT preamp is noticeably improved over the earlier unit. You can easily distinguish one instrument from another. The entire sonic picture is much clearer, with much improved low level resolution. Musical nuances and clues are more easily discernible. Even the slightest movements of performers become much more apparent. Due to the increased transparency, palpability, and greater ease of sound through the Signature, the illusion is just that much more real. You can clearly hear a performer quietly yet distinctly turning a sheet of music, moving and fidgeting in the chair, or walking across the stage; you really start to feel a part of the performance.

Surely, you may ask, there must be something this reviewer didn't like about the CAT Signature. Well, you're right. For me, one minor quibble yet remains with this unit: the incremental volume increase from one click stop to the next is too large. Well, maybe it's not really such a minor quibble after all—actually it's often a real pain in the butt!

The problem results from the use of 3 dB increments in the stepped attenuator volume control. Regardless of the whereofs and wherefores, I—like many others—find these crude increments somewhat annoying. Often, you find yourself needing a 1 dB bump to lock in on a preferred listening level; 3 dB often feels (sounds) like a lot when you're close to achieving that one right point for the music. With the CAT, no such luck. If you find yourself close to obtaining just the right level, well, leave it there. No way to tweak it with the CAT. Most volume controls found on other preamps are no match for the higher quality attenuators found in the CAT, but come on Ken, there's gotta be some way to address this problem.

I am a relatively cautious and conservative person when it comes to shelling out my hard-earned cash for significant purchases—including high-end audio gear. Being a reviewer has not changed that. The CAT preamp initially posed a real dilemma for me at the time I first became interested in it, as I had heard numerous rumors regarding its shaky reliability. I spent a considerable amount of time chasing down those rumors, but I could not secure enough concrete information to cause me to alter my decision to purchase. I am now happily into my third unit in slightly over four years, and I have personally only encountered one (very minor) problem: a single fouled tube in the phono stage. I simply replaced it with a spare tube and was back in business.

Recently, I heard reports of so-called circuit instability in the new CAT Signature. At the urging of one of the magazine's editors, I contacted Stevens directly to discuss this particular matter. By the time I reached the factory, Stevens was also very much aware of these reports. What I was told was that there had been a failure with one particular unit. However, I was also advised that this problem was a singular event and that the problem was not a recurring one. The CAT Signature has been in the hands of consumers for slightly over a year now without any substantive problems. In my case, my unit has operated without a hitch. Case closed!

I was ready to be impressed by this latest preamp from Convergent Audio Technologies, but I was unprepared for such a full spectrum of improvements. The cumulative impact is not merely incremental but "orders of magnitude"

better. The CAT Signature is truly a significant and outstanding preamplifier.

Convergent Audio Technologies SL1 Signature vacuum tube preamplifier. Price: $4950. Convergent Audio Technologies, 85 High Tech Drive, Rush, NY 14543. Phone (716) 359-2700.

Associated equipment: ProAc Respons 3 speakers; Esoteric Concert Grand Speakers; Audio Research Classic 120 mono block amplifiers; Audio Research LS1 line stage; Oracle IV Turntable with SME Type V Tonearm and Benz Micro MC3 moving coil cartridge; Esoteric P-2/D-2 digital playback system; California Audio Labs Tercet MKIV CD player; ASC Tube Traps; NBS interconnects, digital and speaker cables, plus AC power cords; XLO interconnects and digital cable; Purist Audio interconnects and digital cable; Goldmund Cones; API Power Wedges; MAS maSTER Mat; VPI bricks.

The *Wilson Audio Modular Monitor* Speaker System

Sam Burstein

From the snow capped mountains of Utah to the rolling green hills of Connecticut, a quiet revolution is taking place in the United States.

In the West, David Wilson of Wilson Audio in Provo, Utah is producing one of the most exciting speaker systems I've ever encountered. It's called the Wilson Audio Modular Monitor or just WAMM, now in its Series VII incarnation. I'm sure you've heard about it even if you haven't heard it. I will tell you straight out that I wish I had one in my listening room. There is just nothing like it out there in Audioland. The WAMM speaker system is very carefully crafted by the pay-attention-to-detail team of perfectionists headed by David Wilson. In addition to its numerous sonic merits, it is one of the most strikingly beautiful and beautifully built speakers you are likely to see. The range of this speaker system is full, as in twelve octaves' worth. It represents, in its present incarnation, a tour de force by one of America's leading speaker designers.

In the East, in nearby Connecticut, Dan D'Agostino of Krell Electronics is producing a blockbuster of a reference amplifier called the Audio Standard. This amplifier, I am told, doesn't seem to be rated at a maximum wattage level because it is a staged class-A amplifier whose ultimate power depends upon the supply voltage. However, to these ears it sounds as if it can handle peaks more than 3 dB higher than Krell's previous all-out amplifier, the 200 watt Reference Standard that I had previously heard drive the WAMM Series VI. Add four of these dual chassis monoblock amplifiers to drive the four towers of the 1800+ pounds of the WAMM speaker system, and you better have a listening room floor that is sufficiently supported, or your listening room will be slowly sink down to where the lowest levels of bass reside.

I've had the opportunity to extensively audition the new Series VII at Sound By Singer, a leading New York high-end audio salon. The WAMMs are set up in Singer's listening room #6 (a large room of 18'x25'x11') with the speaker system centered along the shorter wall. I would like to thank Andy Singer, owner of

Sound By Singer, for his warm congeniality and kindness in making the WAMM system available during the period that this report was in progress. I would also like to thank Alex Edwards of Sound By Singer for his patience and assistance throughout the auditioning session.

The sonics described in this report (and it is a report, not a review) are directly attributable to a remarkable audio marriage, and the fruits of genius. Wilson's and D'Agostino's creations represent a significant leap into new levels of audio resolution and definition, and the most superb rendition of music's dynamic contrasts I've ever heard this side of the real thing. The marriage of these two designers, as manifested in this audio combination, creates a musical experience that can only be described as awesome.

The hallmark of the Series VII is its clarity and focusing ability, characteristics that allow one to hear into even the most complicated of musical presentations without losing sight of any elements within the overall performance. Such products, although priced into the ozone-less stratosphere, represent an opportunity for audiophiles to hear what all designers should strive for in creating down-to-earth equipment. Such products also serve as role models for future American technological imagination.

Well, what is the WAMM system? It consists of 4 free standing towers, each one approximately 6.5' tall. Roughly speaking, this speaker system is organized in a similar manner to the top of the line Infinity speaker systems, the IRS V and the IRS Beta. Placed closest to the listener are the left and right channel full-range array towers. The left and right channel subwoofers are positioned behind and interior to the full-range arrays; these huge bass towers are placed with their backs against the wall.

The subwoofer enclosure is front ported, and the muscle power is supplied by an 18" woofer that Dave purchases from Germany. He told me that his cost is $1200 dollars for this driver alone. A Plexiglas plate is mounted over the front of the driver, but is distanced from the driver's front plane by an experimentally determined standoff distance. The Plexiglas is not completely solid but rather has cutouts allowing the right amount of bass driver "breathing" or loading. The subwoofer infrastructure is based on fifteen 2x2" selected solid oak cross braces, each cut in such a way so as to provide an interlocking endoskeleton support structure upon which the outer finished cabinetry work is affixed. Damping material is provided for the interior cavities, and the damping characteristics of the Series VII subwoofers have been modified relative to the Series VI.

An interesting feature of the WAMM is that both subwoofers are fed the same signal so that they present the listener with a purely monophonic sound field below their operating point of 55 Hz. Their low frequency cutoff is down around 8 Hz. Wilson Audio supplies the electronic crossover, powered by a separate high current DC supply, that provides the low pass signal to the amplifiers driving the subwoofers. Dave Wilson notes that the woofer towers of the Series VII system can handle 30% more input power than the Series VI. If a recording has information content down into the area of 8 Hz waves (and how would you ever know?), this system will reproduce it.

The WAMM system will leave you breathless with its ability to recreate an acoustic facsimile of the interaction of the concert hall geometry and the performance. The London compact disk recording of Mahler's Third Symphony under the hand of Solti is an amazing example of just such encoding of the audible infrastructure of a concert hall. The ability of the WAMM to reproduce

the feel of the hall is directly related to the clarity of presentation of information encoded in the frequencies significantly below 32 Hz. The WAMM's ability to resolve down below 10 Hz provides the listener with a more commanding overview of hall dynamics.

With the Solti recording, the listener is frighteningly close to being presented with a simulation of the hall's subterranean acoustic envelope. As a result of the design of the WAMM speaker system, the listener can be psycho-acoustically transported beyond the usual presentation of murky, ill defined subbass information. One is allowed to hear just what the recording microphone really captured—and what resulting information has really been placed down in those record groves or encoded in the form of binary digits on CDs.

Perhaps I'm getting ahead of myself; I haven't even described the most impressive part of the WAMMs: their "satellite" arrays. How would you like to have a speaker that is down 3 dB at 27 to 30 Hz and has an upper operating boundary beyond 40 kHz? And how would you like to have the most seamless presentation in between? Not a bad definition of full-range—and this is the performance of the satellites! The secret to this level of performance is that the full-range satellite arrays are composed of four distinct modules, each of which is specifically designed to cover one particular part of the frequency spectrum, and is mounted on a frame that allows for time alignment. Each module has material and geometrical specifications that minimize self-resonance by placing the resonance point two octaves beyond the operating frequency of that module.

The smallest of the enclosure modules is the mid-range, dubbed the M7, which reproduces the frequency spectrum from 600 to 19 kHz. There are two M7s per channel, each containing a Danish SEAS midrange driver and a custom-made French Focal tweeter designed by Wilson Audio's Tierry Budge. The SEAS midrange driver has been used in the WAMM since the Series III. The M7's tweeter is essentially the same as that used in the Series 3 WATTs, although the settling (decay) characteristic of the WAMM's driver is more complete. The M7's cabinet is constructed of the same high ceramic content methacrylic material used in the WATTs. Even though the M7s appear diminutive, they weigh in at 40 lbs each.

The M7 enclosure consists of two chambers separated by a 1/8" lead gasket. In the forward chamber live the drivers, while the crossover, which is potted (encased in epoxy), occupies the rear chamber. Wilson, by choosing this design, achieves both mechanical and electrical isolation between the speaker voice coils and the crossover components. Clearly the designer of this speaker takes seriously the reality of magnetic and electric field interaction between speaker voice coil and crossover circuit performance.

The crossover design differs substantially between the Series VI mid-range module and the present M7. In the current design, much consideration has been given to minimizing the storage of energy within the crossover circuitry. The improvements contribute substantially to the harmonic rightness and superb transient (with minimal overhang) response characteristics of the Series VII.

Located between the M7s is the electrostatic tweeter array containing Janszen electrostatic panels. These drivers operate in the range between 5 and 40 kHz. It is possible to hear on some source material containing the highest frequency content (bells, for instance) the point at which output from the Focal falls off and leaves the job to the Janszens. This is the only time I could actually tell which driver was doing what. (Boy, do I wish the WATTs had these Janszen super-tweeters.) Because of their speed

and delicacy they provide the harmonic structure so necessary for a realistic rendering of the subtle upper harmonic shadings of live music.

Helping support this structure of 400 pounds, both physically and sonically, is the midbass enclosure module. A pair of B139 midbass drivers from KEF reside in this enclosure. The midbass enclosure also provides support for a completely epoxied passive crossover network that weighs in at 41 lbs. The network, which has had parts upgraded since the Series VI, is mounted on the inside of a hinged rear panel located at the rear of the enclosure. This is the crossover that splits the output from the Krell Audio Standards to each of the four modules making up one of the full-range arrays. Parenthetically, Wilson has devised a patented cross braced and internally damped design that allows the KEF drivers to be highly damped so that they achieve a very smooth response going from 600 Hz down to 36 Hz without equalization, and 27 Hz with the equalizer. Equalizer? Did I hear equalizer?

Yes. As an integral part of this speaker system Wilson Audio provides a Crown parametric equalizer. Needless to say, it is Crown in name only, as it has been substantially reworked by Wilson. All connectors are of the Tiffany variety. MIT cable is used for internal wiring. The original 0.125 amp power supply used in WAMM VI version is replaced with an 8 amp 40,000 micro farad power supply.

The previous WAMM crossover exchanged 6 (3 per channel) operational amplifiers for FET-based constant current source amplifiers. These complicated little devices were individually specked and built by Pat Durran, and plugged into the same sockets as the op-amps. These amplifiers looked like miniature towers of transistors, resistors and point to point wiring, and substantially outperformed available op-amps until recently. However, for the Series VII Wilson Audio discovered a series of op-amps that now outperforms the hybrids. They are fast, stable and transparent. Furthermore, the settling characteristics of the Series VII equalizer have been improved over the previous design.

That, in a nutshell, is what you get for your 125,000 little ones ($100,000 without the sub-woofers). Almost. What you also get is the guy who knows sound and knows how to get that sound into your room after you've put down your hard earned bucks. Dave Wilson will personally fly to your abode and set up the entire system for you. What other manufacturer would do that?

The set up schedule is itself as fascinating as the technology that goes into the speakers; it goes something like this:

Day one: Dave arrives before the scheduled delivery of the speaker system. On this day he sets up the room, the cables, the turntable and aligns the cartridge. He also tries to get a good night's sleep for the intensive schedule that comes with day two.

Day two: The speaker is uncrated. Dave mounts the midrange enclosures on the time alignment frame. The speaker system is positioned in your room by late afternoon. Dave then goes through the pulse alignment of the system. Armed with a pulse generator, calibrated pickup microphone and an oscilloscope, he moves each of the modules forward and backward by means of his patented time alignment system until the signal from each enclosure arrives at the listening position aligned to an accuracy of 5 microseconds! At this point, although the speaker system has been calibrated in the time domain, Dave emphasizes that the system is not ready for listening.

Day three: The active equalizer is brought into play. Using a noise generator, the speaker system and room are calibrated to achieve a flat (within 2 dB) frequency response over all octaves. At this point the system is calibrated in both time and gross frequency domains. At last music can be played through the system. Here Dave remains the teaser because only specially selected pieces are used, the goal being to calibrate the phase of the system using these special recordings. Dave calls this part of the calibration process "voweling" because it opens up the harmonic structure of vowel sounds.

The source material he uses comes from his popular *Ragtime Razzmatazz* albums (Wilson Audiophile: Vol. I, W808; Vol. II, W8212; Vol. III, W8417). These sources have a characteristic of hard musical transient followed by a harmonic signal. The harmonic information will have an associated envelope that will become correctly defined when the phase of each of the harmonic components making up that envelope is aligned. By rotating the Crown's parametric knobs in each octave, the musical wave form "locks in." At this point the subtle shadings of instruments such as oboes, bassoons, contrabassoons, French and English horns, clarinets and so on are rendered with a greater sense of rightness. It is at this point the system is completely calibrated in your room in all three domains.

And if you then want to crank up the WAMMs you can expect to be treated to a system that can provide 125 dB over 12 octaves at 4 meters! This speaker system is so efficient that you can expect to get 99 dB output at one meter with one watt input. Well, now that all calibration trials are completed, how does the system sound?

How does one describe the result of a perfectionist's assault on the state of the art in speaker system design and execution? The sound is so breathtaking, there is nothing available to measure it against other than the live performance. While I wasn't at any of the live performances recorded by Dave Wilson and used to calibrate WAMM installations, I can assure you of intimate familiarity with the recordings *I* used in listening.

For example, I played back the Decca recording of Dimitri Shostakovich's Ninth String Quartet as recorded by the Fitzwilliam String Quartet (Decca D188-D7). My first impression of the sound: Great immediacy, precise focus of the spatial distribution of the instruments, detail, and utter ease of presentation. Once you get over how physically large the WAMMs are, you are surprised by the intimate and delicate presentation of music recorded in an intimate setting. The WAMM system is a musical repeater (rather than rephraser) of what is in the vinyl groove.

Many fine speakers can recreate for you a more or less accurate picture of the sound field. The WAMMs are able to give you the three dimensional sonographic equivalent but with refined holographic accuracy. It is unnerving to hear so clearly the edges of the recording microphone pickup pattern. It is as if the pattern is as clearly delineated as the bubble of text accompanying a cartoon person speaking in the Sunday newspaper funny pages. The main difference in sonic perspective between the Series VI and VII is that the latter maintains the image size as you listen further back into the soundstage. The trapezoidal perspective of the Series VI is virtually eliminated on the Series VII.

You can literally scan inward from the edges of the soundstage and meet up with the three dimensional images of the instruments within that stage. You then notice size of image. If the recording perspective chosen was somewhat distant, the perceived images recreated by the speaker are scaled to a reasonably sized facsimile of the actual instru-

ments. Grossly bloated images are a result of hyper close mike placement. Once the stage is set, I then focus on musical dynamics, both of the subtle shading variety as well as the strong transients pulling the music up into fortissimo.

With the Series VII, the clarity of lines between each instrument becomes a revelation. There is simply no blurring of sonic information You note the harmonic structure of the musical envelope for each of the instruments. A complete harmonic description of the cello was localized in space like an anvil. A thrilling presentation of the viola was superbly differentiated from the first and second violins, all localized and frozen within the soundstage. With such resolution you come away from the experience with a feeling that this system is as close to the real thing as is possible with the current state of technology.

My experience with the WAMM Series VI was in a somewhat different system—Koetsu Rosewood Signature Series III cartridge, Versa Dynamics arm and air vacuum turntable with Krell Reference Preamp, and MIT shotgun interconnect and speaker cable—and it was, at the time, a stunning experience. The *Hot Stix* (M & K Realtime RT-106) direct-to-disc recording heard on the Series VI featured stunning drum dynamics. The coherency of the percussion's wave front as well as the trailing harmonic envelope of the drum shots startled my ears as well as hit me in the chest. It was as if the performance was taking place in the room. The drum set was, to put it mildly, simply there.

To help demonstrate the capabilities of his WAMM system, David Wilson played for me (through the Series VI) a first generation copy of his recording of the John Williams' *Liberty Fanfare* played by the National Symphonic Winds, conducted by Lowel Graham (Wilson Audiophile 88823). This was music composed for the 1984 Olympics. The recording was made possible, in part, through a grant from *The Absolute Sound*. The medium was two-track played at 15 ips. The amount of information on the tape that came through the WAMMs was simply mind boggling; the WAMMs just overwhelmed me in the presentation of that performance. If you're ever feeling down, just crank up this recording and you will be boosted into orbit. Simply a splendid hi-fi experience.

My major complaint with the overall sound of the Series VI with the Krell KRA 200 was that the system was harmonically biased in the direction of the threadbare—perhaps make that "dry." It lacked the quality of warmth that one hears with the real thing. It is a quality I associate with live music, a quality that imparts to the listener a feeling of oneness with the music. These feelings trigger the sense of romance that we identify with the real thing. *However, it is another matter entirely with the Series VII and the Krell Audio Standard amplifiers.* With the presently constituted playback chain at Sound By Singer (Roksan Xerxes 'table, Clavis cartridge in an SME arm, and Krell remote preamp with their inexpensive phono module), *recreation of the original performance is impressive in all the qualities that we usually associate with the sound of live music.*

More listening notes: The Proprius recording of *Jazz at the Pawnshop* (7778-7779) is beautifully staged with the xylophone floating delicately front and center with drums at the rear and the piano to the left. Each voice is beautifully delineated with no harmonic entanglements between any of the instruments. And I loved hearing the Weavers *Reunion at Carnegie Hall*, especially Pete Seeger singing "Rambling Boy," on Analogue Productions APF 005 (Seq.#0752). Pete was in the room!

But the most exciting moment for me was hearing Mirella Freni, on side 3 of the London (MFSL 2-526 limited edition

#00285) recording of Puccini's *La Bohéme*. When Mimi's (Freni's) voice swung up towards the heavens, so did my feeling of musical participation. The system handled the tracking of her voice with absolutely no indication of strain whatsoever. Power handling was effortless with the Krells, and even at peaks (they were putting out over 80 amperes at some points!) the sound remained as natural as at the lower volume levels. The sound was so clean that even at these high volume levels, probably approaching those present close to the stage at a live performance, there was no distortion demon telling me to turn down the volume control. Parenthetically, this was the first time I was able to hear distinctly each and every performer's contribution to the score (the voice of Pavarotti at the time of this recording was more like an English cello compared to its present whiteness).

There is no question that resolution combined with coherency are hallmarks of this speaker system. And therein lies the secret of why the Series VII is so impressive a performer. The WAMMs provide a quantum jump in sonic coherency and resolution of the recorded performance over what was once considered the best. To make an analogy: The performance jump is equivalent to the information gain one expects from a scanning electron microscope compared to the resolution obtained from your garden variety super quality Zeiss optical microscope. To say it in musical terms: I've never before heard the musical perspective and the many sonic nuances on these recordings . . . even though I am thoroughly familiar with them on several other "high resolution" systems (WATT/Entec, WATT/Puppies, Infinity RS-1B, QRS/1D).

To end this report, it would usually be appropriate to give a "buy" recommendation to this product. In this case it is also positively ridiculous to do so. Even though the cost may be a justifiable number based, in part, on the "Rolls Royce" approach of Wilson Audio construction costs (not to mention the R&D costs, and not to mention the travel and time costs to Dave in setting up the system for you), almost none of you will be able to afford it. I can only suggest that you at least try to experience this system. I promise you that it will be unique. This system will give you a view of what is possible when cost is (almost) no object.

Wilson Audio Specialties, 2233 Mountain Vista Lane, Provo, Utah 84606. Phone (801) 377-2233, Fax (801) 377-2282. Price: $125,000, including set-up.

MANUFACTURER'S RESPONSE

Thank you for your ambitious and insightful report of the WAMM series VII. This report of not only the WAMM series VII, but also a comparison to the earlier Series VI, is without precedent. As you would imagine, WAMMs are not easy to review.

There are several reasons why, in spite of the fascinating aura surrounding the system, reviews of any WAMM are rare. The logistical challenges involved in any reviewer's evaluation of the WAMM are daunting. First of all, the enormous cost of the system makes it impossible for our small company to afford long-term memo loans of WAMMs to reviewers . . . as much as I may respect the reviewer or desire that exposure. All WAMMs are custom made with the future owner's room, furniture, associated equipment, and musical tastes in mind; so we can't just "pull a WAMM out of inventory" for review! Finally, the WAMMS themselves are rare. Most people can't just go a neighbor's house to hear one.

Thus I think that Mr. Burstein's approach is resourceful as well as interest-

ing. In spite of the arguments set forth by some reviewers, that the WAMM must be reviewed in *their* home, I believe Mr. Burstein's approach is valid.

Both systems were, of course, calibrated by me, so they are both valid representations of my design intent. Both systems were evaluated in good rooms, with appropriate acoustical treatment. Both systems were tested using the very highest quality associated equipment. The musical sound quality of both systems was evaluated with program material familiar to a very experienced reviewer. As the manufacturer, I've got no complaints!

The WAMM may accurately be described as a system architecture; one which allows it's designer an unprecedented degree of control in the time domain and the frequency domain . . . in the owner's listening room. The WAMM can be more completely adjusted to satisfy its owners listening desires than any other system extant. But the adjustability of the system is only part of the reason for its extraordinary owner satisfaction, the other is sheer intrinsic performance. This performance is guaranteed by personal set up and calibration by the man who had been doing it for over ten years, on four continents.

In the WAMM series VII, we see great attention paid to transient rise time, settling time, and phase linearity over a very wide frequency and dynamic range. Mr. Burstein's very perceptive observations of the system's superior performance in the area of dynamic contrasts, clarity, focus, timbral accuracy, and microphone pattern resolution, reflect our design goals and result in greater musical satisfaction. While there are a few other systems out there that will outperform a WAMM in one or two areas (i.e., play louder, more bass impact, etc.) none of them seems to possess the overall level of finesse of the WAMM.

While we most emphatically do not build WAMMs in order to market WATTs, I feel I would be remiss if I didn't mention that the WATT/Puppy system is built to the same quality standards as the WAMM. In fact, some of the technology reflected in the series VII WAMM, was first developed in the WATT series III. Same quality, smaller scale. Again my thanks for a very thoughtful report!

David A. Wilson,
President
Wilson Audio Specialties

Melos Plus Series *MA-333* Line Preamplifier & *220* Phono Preamplifier

Sam Burstein

I have been quite satisfied, over the last several years, with John Curl's Vendetta Research SCP2 phono pre-amplifier as the first level of amplification in my reference system. It has been measured musically against other would-be replacements, but through thick and thin it has held its own. It is

not surprising that this is the case, for the Curl design has been almost magically crafted to provide the most harmonically consistent output compared to input in the solid state domain. And it has a noise floor that seems to approach the quantum level of hearing. This is, of course, not a review of the SCP2, but rather a salute, once again, to a great designer who has probably done more to advance the state of the art in solid state low level voltage amplification than any designer in the U.S. of A.

This is in fact a preamble to a review of a new front end component that has been designed and produced by Melos Audio and represents, for me, another soaring achievement by an American designer of pre-amplification equipment. The Melos tube based components that I will review have been compared to my reference solid state designs, the Curl and the Krell KBL line stage, over the last several weeks. I want you to understand the deep level of appreciation I have for these fine solid state designs so as to recognize the level of achievement wrought by Melos.

The people at Melos, led by President George Bischoff, should be congratulated on producing a pair of complementary products that are at the same time both true to the music and priced to be relatively gentle to the pocketbook. The components I am referring to are the MA-333 line pre-amplifier and the MA-220 phono stage pre-amplifier. The 220 is the counterpart to the Curl unit and the 333 is the counterpart to the Krell KBL line stage. Some background first on the Melos culture.

The design of the Melos pre-amplification electronics has required over 6 man-years of development by people who are appreciative of live music. The guiding criteria were simplicity of design, with few active stages, and construction that emphasizes care and good execution of detail. This philosophy translates into the production of an electronic device with a high measure of reliability—better than similar units of greater circuit complexity. The MA-333, employing only four 6DJ8 vacuum tubes, utilizes a dual mono, quad triode balanced input coupled to source followers, yielding a higher linear phase output. This stage feeds a pair of high current balanced emitter follower drivers that give excellent drive with less than 0.5 ohms characteristic output impedance.

With such a low impedance, the 333 is capable of driving long cables with minimal loss of high frequency information. In my room, Jim Aud's cables (Purist Audio Design) are 15' long, but there appears to be no apparent high frequency roll off. If anything, there seems to be a flatter response to high frequencies with the 333 than with my present solid state combination of the SCP2–b modified and Krell KBL. With such a low output impedance, the coloration of various speaker cables should be evident with the Melos unit.

The 333 is a two-chassis design. A separate outboard power supply, also dual mono, provides a highly regulated supply of power to meet the voltage and current demands of the signal processing unit. There are separate voltage regulators for each of the stages in the 333, providing virtually complete isolation between stages. The heart of the outboard power supply consists of two toroidal power transformers which, by design, cannot interact with the critical circuitry of the 333. The maximum output of the 333 is 8 volts, sufficient to drive some amplifiers to clipping.

The same design philosophy is incorporated in the 220; it also sports four 6DJ8's and its own outboard solid state power supply. The 220 has 60 dB of gain, so that it's capable of driving any modern moving coil cartridge sporting reasonable millivolt levels. I have used the Koetsu Black, the AudioQuest

B200L, and the Clavis cartridges on the 220 with equal success. The phono overload point is 300 millivolts, and frequency response is virtually ruler flat from 20 Hz to 20 kHz, deviating by only 0.2 dB. Although not as quiet as the SCP2, the 220, with signal to noise ratio of 80 dB below full output, is a very quiet tubed phono stage.

Each channel of the Plus Series MA-220 phono pre-amplifier displays only one rotary switch, which conveniently selects the impedance loading applied to the cartridge. The 220 is calibrated with a low setting of 5 ohms, then roughly doubling in steps up to 180 ohms. Beyond that range the loading can be set to 270, 390, 510, 1k, 23k or 47k.

As far as the back panel is concerned, there is provision for the power supply input from the outboard power supply—which, as specified by the instructions, should be kept as far from the main chassis as possible. If you follow the instructions supplied you will not have a problem with hum, although there is room for improvement in this area. By placing your ear to the speaker with the preamp set to normal listening levels, a small amount of hum can be heard—less than other tube units; more than a solid state device. Running a ground wire between the ground posts of the linestage and the phono stage further reduces this hum level. There are RCA input jacks provided for the cables from the turntable, and output jacks for cables to the line stage. And that's it.

The Plus Series MA-333 Line Pre-amplifier is a full range audio control center. It has a total of 7 rotary switches on the front face panel. On the left side is a mode switch that allows convenient muting (for those dreaded phone calls), a stereo or mono selector, and a phase switch allowing either absolute phase or inverted phase. This feature is convenient when there is a component in the chain that inverts phase and you don't want the annoyance of switching cables; phase is absolute in the vertical position.

On the right is an infinitely variable balance control. To the right of that are three more switches rounding out the control panel: the volume, the tape monitor and the input selector controls. Source material can be selected from any one of 6 inputs: two AUX inputs, a phono, a CD, a tuner or a video input. The monitor control allows one to select any source and route it to tape 1 or tape 2, copy from tape 1 to tape 2, or listen to one source while taping another.

The separate power supply has an on/off rotary switch for each channel of the signal processing chassis. When switched on, the red LEDs on the power supply light up, as well as the two LEDs on the signal chassis. After approximately 3 minutes, the LEDs on the signal chassis will turn green indicating that the pre-amplifier is now operational. The overall feeling I have of the quality of construction is high. The design is well thought out as well as being handsomely executed.

Both units have been evaluated as a single entity; i.e., the sound qualities I describe are generated at the output stage of the 333. For the first 20 or so hours of use, I did not pay attention to sound quality because George Bischoff suggested such a burn-in period. But now, serious listening time . . . .

I used Mozart's Six String Quartets dedicated to Haydn, performed by The Chilingirian Quartet on CRD 1062/3/4 (recorded in 1979/80) as one measure of the high frequency response of the Melos. The performance is quite lively with an intimate perspective of the quartet, although the individual instrumental images seem of natural size. As you would suspect there is plenty of high frequency information—so useful in evaluating soundstage and imaging.

The Ivan Moravec recording of Debussy on the Connoisseur Society label (CS 1866) was used as an example of bass response, dynamic range, attack and overall frequency balance for the piano. The first cut on side 1, "Feux d'artifice," was especially useful to gauge attack and dynamics. This piece, as performed by Moravec, mirrors fireworks at a Fourth of July celebration.

The Lorin Maazel/Vienna Philharmonic Orchestra recording of Sibelius' Third Symphony on DECCA Stereo SXL 6364 (a 1968 recording) was used to evaluate the Melos' imaging, soundstage, dynamics, and ability to differentiate between different orchestral voices. The first movement, in particular, with its unity and cohesiveness, allows evaluation of the many voices of the orchestra: horns, woodwinds and the bonding voices of the strings.

The most obvious strengths of the Melos are at the frequency extremes, but without sacrificing the hallmark of the music—the sheer pleasure of a liquid midrange. The bass response, in my room (15' wide by 23' long by 10' high) through the Jadis 80 amps into WATT/Puppy Series II speakers is simply the best I've heard. And, as mentioned earlier, I am comparing that to state of the art solid state designs as well as tubed front ends.

The bass is deep and controlled. Bass, as electronically amplified through the Melos design, does not sound electronic. These Melos gems really allow the bottom end to bloom (read that as airy and uncongested). Bass control by the Melos design is virtually on a par with solid state designs, but it comes forth deeper and at the same time exhibits greater dynamic range. I have never realized, up 'till this moment, how much bass energy my system can generate in my listening room. It is simply a revelation!

This product represents an astonishing level of achievement in tube design, especially since the splendid bass definition doesn't get in the way of the all-important midrange. I find that units with too much bass usually make midrange definition murky. Here the midrange is still allowed to carry the day with the harmonic rightness we associate with live music. The airiness of the bottom end does not detract from the midrange but rather supports the music in a most natural way.

The top end of the frequency spectrum is sweet—extended but not dry. The 333 has a frequency response that extends beyond 300 kHz at the top and below 5 Hz at the bottom end. Gratifyingly, these specifications correlate with a wide frequency response that is clearly discernible.

The soundstage is wide on recordings that contain the information necessary to produce such a stage, i.e., the Sibelius recording. Depth of the stage is more trapezoidal in perceived shape rather than rectangular. Placement of instrumental voices within the stage is superb, although the focus appears slightly spread compared to the best in solid state. But that slight loss of focus is compensated for by a "rounder" or more dimensional character of the musical energy.

The reproduction of the piano on the Moravec recording was thrilling, most probably due to the Melos' tracking of dynamic contrasts and attack. I rate it excellent in its ability to preserve the attack and the subsequent decay of the sonic envelope (a characteristic of live music that goes into making it so thrilling), as well as its ability to preserve intertransient silence between the decay and subsequent attack. The Melos won't capture every minor seismic tremor from the record grooves, but if it's music you want then it's the Melos tubes that will give it to you.

It is clear to me that the people at Melos Audio are lovers of music, first and foremost. They have designed a product that is true to the music, and they have done it at a price that, although not of the low or mid-fi price point, is considerably lower than units of comparable quality. Nor does one have to sacrifice on appearance in order to get the state of the art in musical reproduction. The level of construction of these units is good, though not of the Krell battleship style (but you're not paying the price for battleship construction). There is no doubt that the Melos phono and line stage preamp combination provides state of the art musical reproduction that invites you to re-listen to all your recordings. Simply delicious.

This unit is in the big leagues so watch out ARC, c–j, Krell and all the other big names. Most highly recommended!

Melos 220 phono preamp: $1095; 333 line stage: $2395; if purchased together: $3395. All chassis are 19" wide x 31/2" high by 133/8" deep. Melos Audio, Inc., 723 Bound Brook Road, Dunellen, NJ 08812. Telephone 908-968-4748.

Reference system: Melos MA-333/220 preamp; Basis turntable; ET II/improved arm with Wisa pump; Audio-Quest B200L, Koetsu Black & Lyra Clavis cartridges; Purist Audio cables; Jadis JA-80 amps; Wilson WATT/Puppy Series II speakers.

Thiel *CS2.2* Loudspeakers

Mark Block

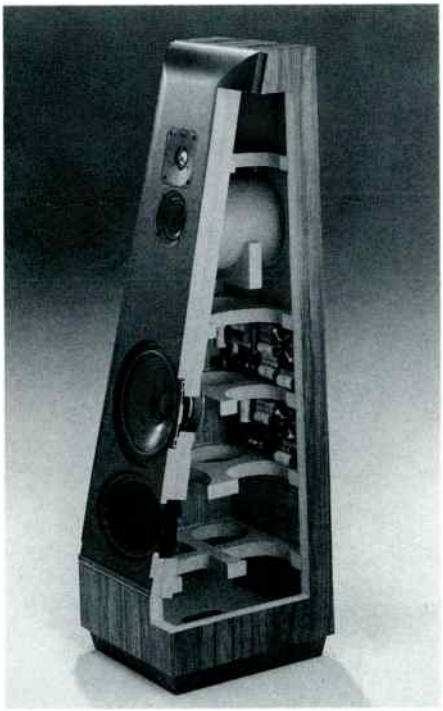
Maybe it's a sign I'm growing old, but I've been listening to Thiel 2.2 speakers for four months now, and they haven't done the thing that everybody says Thiel speakers do: They haven't burned holes in my ears. Everybody knows that candy will ruin your appetite, that a BB gun will shoot your eye out, and that Thiel speakers will burn holes in your ears. "Everybody" can sometimes be wrong.

Admittedly, I'm male, I'm middle aged, I went to loud rock concerts when I was young and therefore my high frequency hearing is probably sagging—along with the rest of my body—but I swear these speakers aren't bright! In fact, they are so smooth that I sought out my meanest, nastiest CDs and found them to be at least tolerable, and at best pretty good sounding.

The Thiels have been an education to me in many ways. Part of the educational experience, unfortunately, has been learning that these speakers will never sound their best in my basement listening room. Major, major bummer, because they work so well in so many ways. The good news is that Russ Novak lent me his apartment for an extended listening session, so I was ultimately able to get a handle on the inherent character of these speakers. (My task, after all, is to review the speakers, not the listening room. Your task, dear reader, is to read this entire article without skipping anything!)

UP IN THE MORNING AND OUT TO SCHOOL

My education began with the physical aspects of the 2.2's. You really get a lot for $2250: a slim, attractive, floor-standing three way system with high quality



drivers, a beautifully crafted cabinet, and the kind of internal bracing that would be more appropriate to a "trick" Volvo ready to withstand a monster truck in a TV commercial.

The instruction manual (in two parts) is one of the most thorough and slick I've ever seen. The "Technical Information" part is six pages of philosophy, descriptions, charts and graphs. It's so comprehensive that a reviewer could crib most of his article right out of this manual. Hell, I'm not proud; I might stoop to that myself. It's actually good stuff for a consumer to know.

The driver compliment starts at the top with a 1" metal dome tweeter—the same tweeter, in fact, used in the flagship CS5. Thiel says that the wide roll surround and short coil/large gap de-

sign "provides very low distortion and high dynamic range." The linear excursion is said to be 1.5 mm with a dynamic range "15 dB greater than standard tweeters."

Below 800 Hz a very unusual 8" woofer takes over. This woofer has actually two separate cones of different shapes joined at the rim and the neck with air in-between. According to the Thiel brochure, this structure is "drastically stronger than a conventional diaphragm of equal weight. This increased strength causes the frequency of lowest diaphragm resonance to be substantially higher and low level vibrations to be substantially less."

An extra long voice coil provides for long excursion and high output. Several refinements to the magnet structure are aimed at reducing harmonic distortion and non-linearity in frequency response: the center pole piece is surrounded by heavy copper sleeves which "practically" eliminate temporary demagnetization and resulting field strength changes caused by the amplifier's current creating its own magnetic field.

Between these two high tech beauties lies a plain looking 3" cone midrange working up to a 3k crossover point. The only unusual thing about this driver is that Thiel has almost nothing to say about it in the owner's booklet. For those who think that getting the midrange right is the most important aspect of speaker design, you're just going to have to forget hype and *trust your ears.* Can you handle it?

For bass freaks, a 6"x9" passive radiator fills out the bottom octaves. The speaker's frequency response (-3dB) is quoted as 33 Hz–27 kHz. In my room, a 31 Hz test tone was loud and clear at my listening chair, but response was very rolled off below that. Not too shabby. Sensitivity, by the way, is in the low/average range at 86 dB @ 2.8v–1m, and impedance is 4 ohm with a 3 ohm minimum. A tube amp is therefore not out of the question, but it had better be on the brawny side.

In keeping with Thiel's philosophy of maintaining phase linearity, the crossover for the 2.2 is all first order (6 dB per octave) and quite complex—26 elements utilizing 35 parts. The electrolytic capacitors are all bypassed with polystyrene types, and there are no electrolytics in the tweeter's path. To help the phase coherency, the drivers are time aligned by means of the familiar sloping baffle.

To further eliminate time and frequency response errors, the already narrow front baffle has been artfully rounded off at the sides and top. No corners means less diffraction; spatial cues should be more focused and transients less smeared. Although these are large box speakers and at this price level one cannot expect the boxless sound of an electrostatic, much effort has been put into getting as close as theoretically possible. The 1" thick cabinet has been heavily braced internally, and the front baffle thickness has been doubled up to 2". Does this baffle design amount to overkill? Not really. Remember that the drivers are directly mounted to it, and any energy imparted to the baffle will be re-radiated directly at the listener.

According to Thiel's "Design Philosophy," this extraordinary (for the price) engineering has been aimed at a simple but elusive goal: "faithful translation of all tonal, spatial and dynamic information supplied by the amplifier." Ah yes, the high-end Holy Grail. A worthy pursuit. Thiel then goes one step further. "The CS2.2 is not intended to mask or mitigate shortcomings of the recording or other components in the music playback system." These are code words to me. Like when the Secretary of State tells the press that talks have been "frank." We all know what this means: The two negotiating teams came just

short of flipping the bird at each other. Reading the Thiel statement, I knew what to think: The speakers will burn holes in your ears.

'ROUND AND 'ROUND AND 'ROUND YOU GO

Of course, almost any speaker will sound thin and nasty before it's broken in, so I put on a test CD, hit the repeat button, and played pink noise and warble tones at moderate levels for about 150 hours (over a two week period). Incidentally, speaker cable hook-up is via multi-way posts *underneath* the speakers. This out-of-sight arrangement makes for a pleasing visual presentation, but is a bit of a pain if you like to experiment with cable swapping; the speakers must be laid on their sides in order to get at the connectors.

Before I got around to playing much music I noticed a slight buzzing sound from the midrange driver of one of the speakers. A call to Thiel resulted in a quick replacement. More break-in followed. I also noticed that a small area of the surround on the passive radiator on the *other* speaker was starting to come unglued. No air leakage was detectable, and the speakers measured identically on very low frequency test tones, so I didn't consider this a problem. Four months later, the surround had not deteriorated any further.

One other thing. The grilles are a masterful engineering exercise, wrapping around the curved baffles seemlessly, with absolutely no part of the frame in front or to the sides of the drivers. The result: no secondary reflections, no image smear. However, on low frequency test tones played at not very loud levels, the grille frames buzzed noisily against the cabinets. A couple of strips of foam or sorbothane in the right places would no doubt have taken care of the problem, but I decided to do the cool audiophile thing and audition the speakers with the grilles removed.

With the 2.2's now well prepped but not fine-tuned in terms of placement, I put on some of my best digital ear-splitters, fully expecting the worst. Joni Mitchell's *Night Ride Home*, for instance, is an engineering travesty as far as Joni's vocals are concerned (although excellent in other respects). Through the Thiels you can hear that the voice is EQed inappropriately, but—I'll be damned—it was quite listenable and enjoyable.

The *Deadicated* album (Arista ARCD-8669) features some nice performances of Grateful Dead tunes (with the exception of an exceedingly lame and lifeless version of "Uncle John's Band" by the Indigo Girls), but it always sounded uncomfortably bright. Not anymore. Bright, yes. Uncomfortable, not at all. I decided to try a recording with some gutsy, deep bass, Sarah McLachlan's "Back Door Man" from *Solace* (Arista 18631-2). It clearly exhibited some of the very low frequency might that I know is there, and the slightly hard edged vocal was smoother and more listenable than I remembered.

There was only one problem: almost no mid and upper bass. "Tick Tock" from the Vaughan Brothers' *Family Style* (Epic ZK 46225) sounds bassy on most systems, but here the big, propulsive rhythm was tame, polite; the musicians seem to be holding back. On the plus side, tantalizing nuances of timbre came through the Thiels effortlessly, particularly on "Hillbillies from Outer space," which features a pedal steel guitar amplified to sound like an organ. But again, there was no drive, no dynamics, no jump factor.

Knowing now that the speakers had immense potential, I wasn't overly concerned about the bass. It was time to get down to the dirty work of positioning the speakers and then adding the supplied spikes. These metal spikes, by the way, are not adjustable—they simply push into pre-drilled holes. One set of

spikes is sharp for piercing carpet, while another rounded off set is supplied for use on floors you don't wish to mark up. They worked well on the concrete floors of my basement, but when David Nemzer tried them on the creaky planks his 18th-century townhouse, the spiked speakers looked like the Leaning Towers of Brooklyn. Thiel would be wise to provide threaded inserts and spikes that allow for leveling.

WORKING YOUR FINGERS RIGHT DOWN TO THE BONE

After hours of grunting and groaning while annoying pink noise and low frequency sine waves and warble tones assaulted my ears, I ended up with the speakers almost in the same spot formerly occupied by my long-standing live-ins—Acoustat Spectra 22 panels. It shouldn't have been surprising: Room dimensions determine the standing waves, so if the object is to avoid those buggers, choices are limited. The one dilemma I faced was that the speakers imaged best approximately three feet from the back wall and three feet from the side wall. Placing speakers an equal distance from two boundaries is a well-known no-no as far as bass response goes, so I moved the speakers slightly closer to the back wall; these speakers have so much natural depth that I figured I could sacrifice a little.

For more on how I go about finding the perfect spot for speakers, see "Audio Basics" in this issue. For the record, my listening space is 13' x 18' with an unfortunately low seven foot ceiling.

For fine tuning I needed some serious, all-acoustic classical stuff. All together now: NOT!. *The Best of Delaney and Bonnie* on Rhino (R2 70777) has some all-time great music, but it's so much brighter than the original LPs that I have to take serious exception to compilation producer Bill Inglot's audio taste. Despite his excellent work in the past, he really screwed this one up (and since Delaney and Bonnie and Friends was one of the seminal groups in my musical coming of age, I take it personally: Up yours, Bill!).

Again, vocals were smooth, and there was less apparent tape hiss than through the Acoustats. The Thiels reproduced Eric Clapton's incendiary solo on "I Don't Want to Discuss It" with an electrifying clarity, but Carl Radle's bass was still missing in action. Low bass was present but without much mid and upper oomph, so the quality was often of the one-note variety. "Going Down the Road Feeling Bad" from *Motel Shot* didn't "lock in" realistically. On my regular electrostats it's magic; with the 2.2's it was good but just slightly canned sounding.

YOU'RE STUDYING HARD AND HOPING TO PASS

I was now starting to suspect a room problem. However, the speakers at this point were not spiked into the floor, so in went the spikes, and . . . whoa! The one-note bass was replaced by fuller, more punchy and much more dynamic sound. It was as if someone threw the loudness switch on. Dramatic.

With the spikes giving the Thiels a firmer grip on the ground, imaging became sensational—wide and deep. On John Prine's "All the Best" from *The Missing Years* (Oh Boy OBR-009CD) the organ can be heard well to the rear and outside the boundaries of the loudspeakers. Transparency was excellent, probably a notch above my Acoustats. The "clippity-clop" sounds from both sides of the soundstage on "The Sins of Memphisto" were more present, and made much more of a rhythmic statement. The song took on a more old fashioned, horse drawn quality, which helped make sense of the lyrics—about growing old.

Image stability is not a problem either, even with a slightly off-center listening

The solution, I thought, was to turn the speakers over to another reviewer for a more fair test of their overall capabilities. We picked David Nemzer of "Obscura" fame (if that's not a contradiction in terms). Unfortunately, the speakers got to David's house just as he decided to let someone modify his beloved tube amplifier. When he got the amp back . . . well, you don't have to be Jeanne Frigging Dixon to predict what happened . . . he hated it. (Let he who is without sin cast the first VPI brick. I myself would have chastised David severely were it not for the fact that I just had my Acoustats modified, and now I can hardly stand them! Why is it that we can never leave well enough alone?)

David was ultimately unable to unscrew-up his amp in time to make our deadline, so the speakers were driven over to Brooklyn neighbor Russ Novak's apartment—where we all spent an engaging evening picking apart both the Thiels and each others' taste in music.

Russ' room is much smoother and warmer than mine, which tended to accentuate certain characteristics in the Thiel 2.2's—characteristics already evident despite the lack of bass in my room. Swapping out Russ' big Mirages, we were immediately taken by the Thiels' warmth, richness, and easy going nature. The bass was full and deep, although not in a spectacular, impress-your-friends-and-piss-off-your-neighbors way. Putting on the infamous Dorian *Pictures at an Exhibition* organ recording, we all endured the lame interpretation just long enough to verify that the low-end was satisfyingly hefty and tuneful.

Interestingly, I had asked Russ to remove the silver interconnects from his system prior to our session, as I have never been able to stomach the spitty, over-etched sound such cables produce in my own system (see my cable review last issue). After a few minutes of listening, however, I mentioned to Russ that things were sounding a touch dark and airless; he suggested we put the silver back in—and it helped tremendously.

I admit that I took some flack for my mini cable survey, particularly regarding the brevity of the sonic descriptions. I did it, however, to make a point: In terms of providing the consumer useful information, it's pointless to go into detailed descriptions of cable sound; it's too system dependent. Russ' system, particularly with the Thiels on line, benefits from more detailed cables. Mine doesn't. Go figure.

In any event, the treble range of these speakers remained smooth and sweet in every system we tried, and the bass, moreover, is intrinsically excellent but picky about room placement. There was one coloration, however, that followed us from room to room: the woody lower midrange resonance. Ol' Blue Eyes was decidedly chesty sounding on *Only the Lonely* (Capitol CDP 7 48471 2). Russ calls this the single greatest pop recording in history, but it's too much of a downer for me; I prefer *Songs for Swingin' Lovers*. Trying out "Spring is Here" on the Thiels, it seemed that Frankie was stuck with a winter cold.

Other vocals in other recordings were smoothed over or thickened—from the Chichester Cathedral Choir (*Cathedral Music by Geoffrey Burgon*, Hyperion CDA 66123), to Emmy Lou Harris (*At the Ryman* , Reprise 9 26664-2). The Chichester recording can easily sound glassy in some systems, but here it was handled with consummate ease. Likewise, Emmy Lou's voice has some decided wrinkles in parts of her range, but these speakers take the creases out of her vocal age lines. Maybe the midrange driver is doped with Retin A.

Perhaps related to this smoothing and thickening of the midrange sound is the subtle lack of inner dynamics. In my lis-

tening room, where the speakers are sucked out in the bass, I had not noticed this trait; the midrange stood out with great clarity and transparency. At Russ' place, however, the bass came alive but the midrange became less detailed. When the music should have bloomed, it just stayed put.

I've heard this phenomenon before: In speakers capable of deep, full bass, the low frequency characteristics of the room will affect not only the sound of the bass, but the openness of the midrange, too. In rooms providing little bass reinforcement, the midrange of the 2.2's will sound just about right. In rooms with a warm overall characteristic, these speakers can sound overrich and (pardon the oxymoron) disagreeably polite.

YOU FINALLY LAY YOUR BURDEN DOWN

Hollywood has an expression for a well-produced movie: "The money's all on screen." In other words, it's easy to see why the picture costs what it does; nothing was spent on frivolities not visible in the final cut. An audiophile corollary would be a 2-way mini monitor costing $5000. The money's *not* on screen. The Thiels are the opposite of that. A lot of careful design and execution went into the 2.2's; it shows, and it delivers sonically.

In spite of the unfortunate room problems encountered with the Thiels, living with them was quite an education. They exploded some of my long-held beliefs about speaker design, excelling at things I was quite sure they would have trouble with, but performing poorly—in my room—in areas I thought would be easy for them.

To whit:

Bias #1: Thiels, with their flat power response, would sound too bright in a normal room. Not the case. The treble range was an absolute joy.

Bias #2: Thiels, because of their wide dispersion, would create too many room reflections, thereby failing to focus and float an image like my more beamy electrostatics. Wrong again. The soundstage was incredibly wide, deep and seamless, with excellent focus throughout—particularly in the corners. I've heard such imaging before, with designs such as the Wilson WATT/Puppies, but never at so affordable a price.

Bias #3: Thiels would be easier to place in my listening room than electrostatic panels. Guess again. There was no good spot for smooth bass response.

Bias #4: Thiels would kick butt in the bass department, and sound much more dynamic than electrostatics. Surprise. The midbass suckout due to ceiling height of my room robbed the music of life and dynamics. Conversely, in a bassier room, the speakers were smooth and laid back.

Everyone needs to unlearn some things now and then.

Thiel
1026 Nandino Boulevard
Lexington, KY 40511
Price: $2250
Dimensions: 12" wide x 13" deep x 42" high. Weight: 70 lbs each.

Associated equipment: Theta DS Pro Generation II digital processor; Philips 960 CD player; Well-Tempered Turntable and arm; Sumiko Blue Point cartridge; Jadis Defy 7 amplifier; Convergent Audio Technology SL-1 Reference preamp; Acoustat Spectra 22 speakers; Cardas Hexlink V interconnects; AudioQuest Midnight speaker cable; Power Wedge II; Power Wedge V; Room Tunes; TDK and Radio Shack fer-

rite noise filters; Sumiko Disc Mat; Sims Navcom feet; Harmonix/Combak tuning bands and feet; Nitty Gritty Model 2 record cleaner.

Vimak *DS2000* D/A Processor & Pre-amplifier System

Paul Lupie

I've been enduring a love-hate relationship. I loved the sound. Yet I hated the equipment. And so we co-existed, my high-end gear and myself, enjoying the good and accepting the, shall we say, less than convenient. The high-end industry seems to have a penchant for minimizing controls and functionality, even though hi-fi equipment does not have to be stodgy, inconvenient and unreliable in order to sound good. High-end has carried this rap for quite a while. But let's face it fans, this stuff is getting too damn expensive not to provide the convenience, performance and aesthetics that can be derived from fully utilizing state of the art electronics, fabrication and assembly techniques.

Every so often one comes across an event, an individual, or in this case a group of individuals who, by their actions, signal a change: It's time to trash your old outdated notions about how high end manufacturers think, design, act, and sell! Vimak (pronounced "vee-mack") is a company with a design philosophy recognizing that "while overburdening an audio unit with features is undesirable, some carefully planned and well-executed features and controls add value to the unit." In addition they provide the convenience and flexibility that the change in attitude out here in the high-end market is beginning to demand. Armed with a global perspective, Vimak has looked at the market, the economy and the audiophile and realized that it's time to embrace ergonomics, flexible intelligent design, state of the art technology, as well as cosmetic uniqueness.

The Vimak DS-2000 has arrived. This sleek looking unit (personal taste reflected here!) is a high performance digital-to-analog converter and preamplifier system designed to serve as a direct interface between digital audio sources (CD players, DAT players, laser disc players and/or direct broadcast satellite receivers) and a power amplifier.

TECHNICAL DESCRIPTION

The DS-2000's physical appearance is anything but traditional. Your attention is immediately grabbed by the simple and elegant curved front panel. This was not perpetrated only for looks, but carries an ergonomic purpose. The control panel is intentionally angled precisely at 10.5 degrees to best suit the contours of the human hand (sorry Cheetah!). With external dimensions of

4.375"(H) x 17.5"(W) x 18.23"(D) and weighing 42 lbs. (19 kgs.) it's no wonder that the Owner's Manual recommends that you "first verify that the strength of the shelf, table or equipment rack is adequate to support the weight of the unit." Pretty massive as front end equipment goes. A slight drawback could be the almost 19 inch depth for those few with standard shelving or racks.

The chassis is made out of high grade aluminum alloy along with heavy gauge steel (the curved front cover is a single piece of 1/4" cast aluminum). Meticulous attention was paid to the finish (no skimping here): copper plating of machined aluminum, then clear anodizing followed by 6-8 coats of acrylic enamel paint, of which the final 2 are clear. The front panel attests to the technical sophistication of the unit. It contains the output gain control (alias "volume"), a 128 character alpha-numeric vacuum fluorescent display (for system status and error messages) that can be adjusted to complement ambient lighting. The display is programmed to stay on only for few seconds after each event or status message is flashed. Other front panel features include multi-function LEDs, a -20 dB muting switch, input control switches and a balance control. And that's not all! If you act right now you will find that there is a hidden pivoting front door! And behind door number one are . . . yes . . . auxiliary inputs to accommodate temporary connections (what a convenience!), a stereo headphone jack (with its own amplifier), a phase invert key and a fixed/variable switch.

There is also a programming key that allows you to customize the unit. This is accomplished by stepping through a menu system. The brightness of the display on the front panel can be changed to four different brightness levels (25%, 50%, 75% and 100%). Though the digital inputs have factory default labels on the display, they can be changed to reflect the actual names of the source being used, or to any other user-preferred nomenclature (Hal, Arnold or perhaps Tipper!). You are also given the option to select two types of dither: either 'standard' dither or 'weighted' dither. If you totally screw up the settings and forget what you've done, you have a way out! Factory default settings can be easily restored with a special power on sequence.

The unit accepts up to five main digital audio inputs on the rear: two optical (2 Toslink or, as an option, ST glass fiber), two coaxial (RCA unbalanced) and one AES/EBU format (XLR balanced). The two auxiliary inputs (behind the door on the front panel) consist of one Toslink and one RCA unbalanced. Each of the input sources can be given your own customized names, so when selected, they appear on the front panel display. There are a total of three stereo outputs on the unit: the headphone jack (behind the front panel door), and on the rear panel an unbalanced RCA and a balanced XLR.

Some unexpected connectors also appear on the rear panel. The unit contains industry standard RS232 and RS485 communication hardware. This provides the capability to test the unit by remote means via a telephone and modem using diagnostics, as well as allowing for the downloading of revisions and enhancements to the firmware. The unit can also use these communication ports to act as a "control terminal" in complex multi-room environments. The DS-2000 can be configured to control or be controlled by a variety of devices, including a personal computer or another DS-2000. There is a full function infra-red remote control that offers the entire programming capability of the front panel controls.

Back to reality, please. Thick, solid aluminum surrounds a steel frame, isolating the internal circuitry from electromagnetic interference, and pro-

viding a high thermal mass. The unit thus acts as an effective heat sink. Digital, analog, front panel, and power supply board assemblies are all shielded in separate sections, and the entire inner framework is copper-plated to reduce electrical and magnetic interference. Converter circuitry is further isolated from interference by means of separate digital and analog power supplies, and specially designed fiber optic couplers completely eliminate electrical connections between the analog and digital circuit boards.

Let's talk about the volume and balance controls. The analog output signal is attenuated in two ways: *before* the conversion (in the digital domain), or *after* the conversion (in the analog domain). The DS-2000 takes a hybrid approach, utilizing the advantages while discarding the disadvantages of each of these methods.

Attenuation in the upper part of the volume control is handled by controlling the reference voltage to the 1-bit DACs. The reference voltage to the one-bit DAC determines the output level, therefore controlling that reference will produce corresponding changes in the output signal. The system micro-controller determines the desired volume level by performing an analog-to-digital conversion of the DC voltage corresponding to the angular shaft position of the potentiometer on the front panel (otherwise known as the volume control). This digital value is fed into a 12-bit MDAC (Multiplying Digital-to-Analog Converter). The 12 bits correspond to a step size of 0.1 dB over a 30 dB range. The MDAC controls the reference for the one-bit DACs. Each stereo channel has an MDAC. Thus volume is controlled digitally from the micro-controller. Because the noise floor is also reduced along with the signal, you avoid the disadvantages of digital volume controls.

In the "lower" part of the attenuation range (below -30 dB) the MDACs hold the reference voltage constant, and digital signal processing is used to attenuate the output level. At these levels the noise floor is so significantly reduced that volume can be controlled digitally. To set balance, an optical encoder determines the position of the balance control, and this is factored into the DSP gain setting for each channel. The analog signal remains untouched because it never passes through resistors, relays or mechanical devices.

Finally, before we delve into the audio signal path, I want to make sure two features are defined clearly to avoid confusion. First, the Gain Switch. Located on the rear panel, this control provides 10 dB of additional gain to the audio output when in the up position. Vimak recommends leaving this switch in the down (0 dB) position, unless you have a power amplifier that requires the higher level output. The second feature that deserves careful attention is the Fixed/Variable Switch. What this switch does is provide you with a standard CD player output level by inactivating the gain and balance controls. Remember, the features are controlled by a micro-processor, and this switch simply tells the CPU to ignore any signals from the gain and balance controls. The signal path is not altered, touched or changed in any way. Thus you have effectively eliminated the preamplifier functions, and have turned the DS-2000 into an outboard digital/analog converter feeding a conventional analog preamplifier.

THE (DIGITAL AND ANALOG) SIGNAL PATH OR

> "Over the River and through the woods . . ."

Each of the seven digital audio inputs has an optimized receiver circuit. For example, the coax inputs (whether RCA or optional BNC) are transformer-isolated, as are the balanced XLR connec-

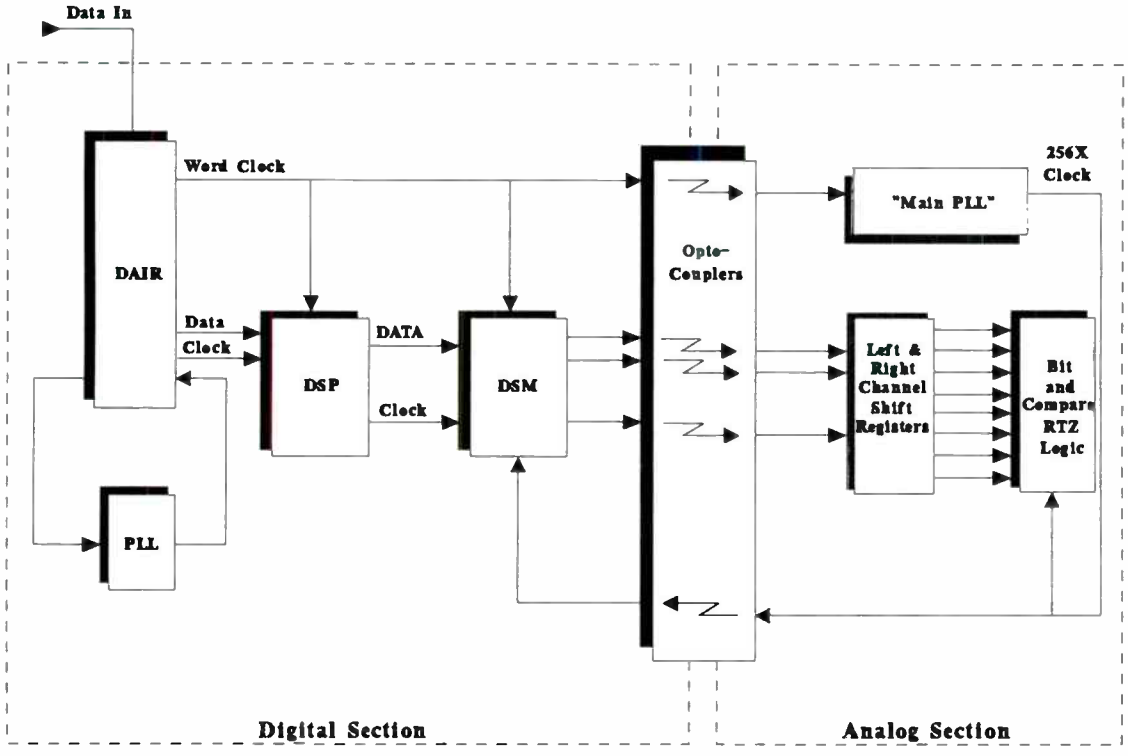


FIGURE 1

tors, taking advantage of the full AES/EBU transmission scheme.

The selected input goes into a decoder chip known as the DAIR, or Digital Audio Interface Receiver, as shown in Fig. 1. This chip extracts the audio data from the serial bit stream. The DAIR used in the DS-2000 has the capability to decode the full 24 bits of audio in the digital interface standards when transmitting devices become capable of such high resolution. The DAIR circuitry is equipped with a local low-jitter Phase Lock Loop, 200 picosecond RMS. This local PLL is in addition to the "main PLL" used later on in the signal path. Its purpose is to quickly extract the biphase encoded data from the selected digital input as well as the sample clock rate, which is used as the source or reference for the "main PLL."

The audio signal is now fed into the DSP, which is the Motorola DSP 56001. The digital signal processor performs volume, balance, phase inversion and dither computations with 56 bits of internal precision. Remember, you have the choice of selecting either of two dither signals: *broad-band triangular* or *weighted*. Dither is generated by the DSP-56001, while also implementing a dither *decision* algorithm to turn dither on or off when either of two conditions are met: when the input source material contains more than 18 bits precision, or when the volume control is below the threshold where digital attenuation begins to take place. So when you select the dither type, it is turned on only when either of these conditions are met; thus, the slight loss in signal-to-noise ration can be avoided in situations where dither is not required.

The output of the DSP feeds the Delta-Sigma Modulator (DSM), which performs the function of over-sampling the stereo audio data by 128 times the incoming rate. This generates a single bit output which drives the DAC circuitry. This type of converter uses a very high order noise-shaper. The higher the order of the noise-shaper the more it pushes the noise out of the audio band into the ultra-sonic regions. The Vimak uses a fifth order noise shaper, versus the standard Bitstream's third order noise-shaper. We now have left and right audio data, single-bit streams, along with a clock that is fed through high speed optocouplers.

The incoming sample rate clock, from the DAIR, is fed to the high performance "main PLL" located very near to the D/A circuitry on the analog board. This is no accident, but is by design, in order to minimize jitter. Jitter seems to be a very popular topic these days, and rightly so. The time-based errors that effect the word-clock frequency are suspected of having significant impact on sound quality. Most of the major manufacturers in the D/A converter world have devoted much design time to jitter attenuation. Vimak is no exception.

A closer look at this "main PLL" reveals that it contains three dedicated voltage-controlled crystal oscillator (VCXO) circuits. These three circuits correspond to the three possible input sampling frequencies of 32 kHz, 44.1 kHz, or 48 kHz. Each consists of a phase locked loop and a custom quartz crystal oscillating element. With a 250 ppm window, they have a wide enough lock-on range to phase-lock any reasonable-quality input source. To avoid possible undesirable beat frequencies, usually encountered when three oscillators are active at the same time, Vimak activates only the oscillator corresponding to the specific sampling frequency sensed at the input stage. The other two are powered down.

This design topology is said to deliver an ultra-stable PLL to the specified 250 ppm total deviation allowance. It reclocks the one-bit left and right-channel outputs at a 256x rate, with jitter distortion reduced to a level below 50 pico seconds RMS. This phase locked loop

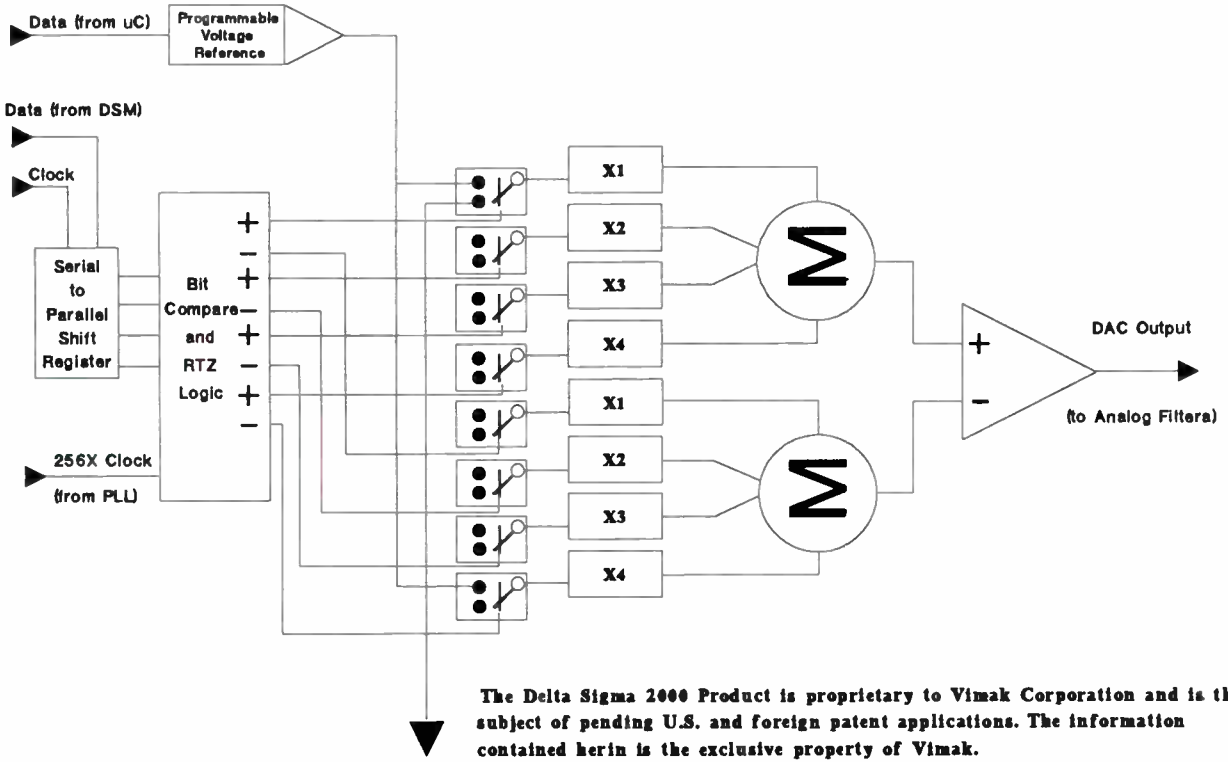


FIGURE 2

then clocks the circuitry that reformats the audio data into four one-bit streams per channel. These four one-bit streams then feed the four pulse-density modulated DACs.

This is the point in the signal path where a major decision in design methodology usually takes place. The reason: We want to minimize filtering requirements. The output of the DAC is in a very rough, unrefined format. The amount of additional processing is dependent on the DAC architecture. As a rule, the byproducts of D/A conversion should occur at frequencies well above the audio signal, so that filtering has a minimal effect on what we hear. Vimak chose to minimize filtering. The only way to do this is to improve the output signal of the DAC. Since you cannot simplify the output of a single one-bit DAC, you use several of them to manipulate the signal to obtain the desired result (see Fig. 2). *Voila!* The Quad Balanced PDM DAC! Vimak added three DACs to the usual one. The output of each DAC is delayed by one, two and three clock periods. The four DACs per channel are balanced DACs (separate positive and negative polarity outputs), are differentially summed in the analog domain, with outputs feeding into third order low-pass filters (a much easier filtering requirement).

Finally the outputs of the low pass-filters feed the output drivers: a single-ended output driver (for the RCA unbalanced), a balanced output driver (for the XLR connectors), and the headphone driver (routed to the front panel headphone jack). *Hello Grandma, We're here!*

THE SOUND

I first heard the DS-2000 at one of our Audiophile Society meetings. The unit we listened to was hot off the production line just four hours earlier. I was immediately impressed—more so because I knew this unit had been tested but not broken in. The unit I received to audition here at home had "been around the block" and was fully broken in. Now, I was really impressed.

Having some formal musical training, I am usually very sensitive to the musicality of components. I save the analytical decisions for later on in my listening experience. The DS-2000 has one of the most musical and lyrical sounds I've heard. I was always at ease listening to its unlabored presentation. But the trait that immediately jumped out at me was the resolution of individual sounds. Orchestral instruments were three dimensional, holographic in nature. I often use scores to follow music when I am listening (Schoenberg 24, Copland 31). I have developed a habit of following, more or less, obscure lines and motifs in much of the music I am familiar with. Because of the DS-2000's ability to present each section or instrument with so much "air" around it, I am able to satisfy this penchant for the obscure with ease.

The exceptional ability of the DS-2000 to reproduce accurately the timbre of those sounds in the upper midrange and treble, without the infamous "digital noise baggage," made my listening time an involving and enticing experience. This ability to crystallize the images into separate entities without compromising the ensemble flavor of the piece probably results from a lowering of the noise floor rather than an artificial enhancement of the original sonic signature.

The glorious digital remastering of Schubert's Piano Quintet in A major, *The Trout*, by the Wiener Philharmonisches Streichquartett (London 417459-2) aptly demonstrated this trait. Here the intricate ensemble quality of this hefty chamber piece was never lost, yet I was able to follow a melodic line at any point in the piece even though it may have been secondary or even tertiary to the current dominant thematic part. The

complicated tonal personality of the piano on this recording, as well as on the Keith Jarrett release of Dmitri Shostakovich's *24 Preludes and Fuges op. 87* (ECM New Series 437 189-2), is reproduced with a silvery delicacy—overtones and all. Yes fans, the piano is once again presented to the listener as the dynamic (pianoforte) percussion instrument it is, sans that ballpeen hammer sound. Of course, remember that with the current state of the art in digital reproduction, no processor is the panacea for improving a bad recording or remastering job. There are some CDs that will never cause anything short of acute ear hemorrhaging.

One aspect of the DS-2000 that is of tantamount importance to me ($10 word supplied courtesy of Roget) is the bottom end. I prefer a weighty, substantial bass, boominess not tolerated. Sounds like a Personals ad: "SWM seeks processor with athletic ability to reproduce bass." Anyhow, this processor is not intimidated when it comes to clear, massive lower midrange and bass reproduction.

I used two favorites for my listening, Alpha Blondy's *Jerusalem* (Shanachie 43054) and Raritaten Fur Kontrabass, Rossini's *Duet for Cello and Bass in D major* (Ars Vivendi 2100196). These two very different types of music always give my ears a clear illustration of the bass capabilities of whatever I am auditioning. The relentless pulsating reggae rhythms of the Alpha Blondy disc really come through with the punch of a heavyweight champion. The bass is precise, with tonal accuracy and realistic balance. In the Rossini *Duet*, there are numerous melodic lines played by the double bass in the extreme low registers of the instrument. We rarely have the opportunity to follow a lead melodic line in the lowest depths of the instrument's range. I have listened to this disc many times, and I can tell you that, more often than not, the pitch of adjacent notes can be indistinguishable in a poorly balanced system. Not so with the DS-2000. Each passage was resolved with fine detail—nuances and subtleties included. In fact, I heard that unique woody, resin-like characteristic that one senses at a live recital.

One of the most endearing arias ever written by Mozart is from his very early opera *Zaide*, "Ruhe sanft, mein holdes Leben." The rendition of this piece by Kiri Te Kanawa's *Operatic Arias* (Philips 411 148-2) is re-created accurately and beautifully, with total truth to the sound of Ms. Te Kanawa's voice. Vocal representations are so revealing to the ear, especially if one is familiar with the artist from a live performance. The DS-2000 does a marvelous job of reproducing the human voice.

Soundstage is revealed through the subtle presentation of its parts, which should be candid though not blunt and clumsy. With the Vimak it's all there: the width, the depth, the three dimensional image, enveloping you without suffocating you. I often use choral works at this point in my listening. An old stand-by, Ariel Ramirez's *Missa Criolla* (Philips 420 955-2) was popped into the transport, and the magnificent resonances of the Santuario de la Bien Aparecida came to life in my listening room. The beautiful alto line that occurs just before the tenor entrance (Jose Carreras) is captured with all the warmth, tenderness and lushness that is called for by the composer.

I also listen to the interaction of the tenors and altos in the rendering of Adolphe Adam's "O Holy Night" on the Proprius release *Cantate Domino* (Proprius PRCD 7762). Often one's ears tend to become accustomed to the frequency of the soprano solo because of the addictive melody, causing us to miss very beautiful harmonic interactions. Only the most revealing of equipment can reproduce them with clarity. Once again the DS-2000's supreme musicality delivered a sonic moment that brought a

smile to my face. Finally, I just had to administer one of the more esoteric listening tests (courtesy of *The Brass Ear*). Could I count the strokes of the brush on a snare drum? (Get a life!) I used "The Music That Makes Me Dance" from the Shirley Horn release *You Won't Forget Me* (Verve 847 482-2). I could, I did, and Shirley sounded absolutely vivid on this cut.

In conclusion, let me say that I wholeheartedly recommend this processor. Its ergonomic personality, coupled with its great musicality, makes it a must audition for anyone seeking a quality digital engine.

To the skeptics, let me close with this thought: "The exaggeration of sibilants by the new method is abominable, and there is often a harshness which recalls the worst excesses of the past. The recording of massed strings is atrocious." (From *The CD Handbook*.) Some dissidents in our midst? No, this is not a revue of the first CD player, nor of the latest generation of processors and turntables. This was a quote form *The Gramaphone*, Compton Mackenzie editor, 1925. He was describing a new "electrical recording" technique. Newness is usually hard to accept.

Vimak is one of the latest offshoots of the change that digitalization has brought to the world of sonic reproduction. Resistance to change is prevalent in this industry, where subjective impressions and tastes permeate the aural atmosphere. Allow yourself the freedom to experience and understand the new technologies, and the companies that seek to employ them.

Vimak DS2000 D/A Processor and Pre-amplifier System, $5000, Vimak Corporation, 12 Alfred Street, Baldwin Park I, Woburn, MA 01801 Tel: (617) 933-5225

Associated Equipment: Aragon 4004/Mark II Power Amp; Aragon 24K Preamp; Apogee Stage Speaker System; Krell MD-10 CD Turntable; Rotel RCD-855 CD Player; California Audio Labs Sigma Processor; Monster Sigma Speaker Cables and interconnects; Byteline 111 Digital Coax.

The Sequerra Futuresonics *Mk. II*

Earle Stevens

THERE IS NOTHING NEW UNDER THE SUN.

My first speaker systems were home brewed. For many of my generation, DIY provided a hands-on, economical entrance into good sound. My earliest box (mono was king) was a 2 cubic foot two way design. The tweeter was fully enclosed to provide isolation from the back wave of the 8" woofer. When I decided I could afford more bass, a 3.3 cubic foot enclosure for a 12" driver was placed under the now transformed midrange/tweeter combo in a three way configuration. Simple crossovers, independent cabinets—my how modern this seems!

Which brings me to the Futuresonics Mk. II, a modern day reincarnation of this approach. We're looking here at a high-end design that is modular, each section mechanically and electrically isolated with no crossovers between the various units. Most interesting is that the budget constrained audiophile can acquire the system in a modular fashion, spreading the cost over a series of purchases, secure in the knowledge that

the results will be an integrated whole. So there is something new after all. The individual components are the Met 7 Mk. II mini system, the Met 8 Mk. II woofer, the Met 9 Mk. II ribbon super tweeter, and the Met 10–4 or Met 10–8 line source mid/tweeter system.

By the numbers now. The Met 7 Mk. II, the center piece of the system, is housed in an enclosure 11 ¼" high by 7 ⅞" wide and 11 3/16" deep. Weighing in at 13 pounds, it contains a 6.5" woofer and a 2" cone tweeter. The crossover is a first order design that utilizes premium components, including oxygen free copper wire, and is corrected for absolute polarity and time domain accuracy. They are produced in either oak or walnut with a black foam, frameless grille, and cost $750 per pair. Stands are not available from the manufacturer, since they will become part of a full range system and sit atop the Met 8 bass units.

After a quick once over I placed them on 33" steel stands. My previous system was of subwoofer/satellite configuration, so initial placement was easy. The MET 7's need to be well into the room; I would suggest at least 40" from any wall as a starting point. Like most small speakers they image very well, and like some of the best they disappear in the music.

For the intitial burn-in, I connected these speakers to a Proton D940 receiver—an equal in price, and therefore a seemingly good match in a budget system. I listened for a week, using FM stations WBGO (jazz) and WNYC (everything else). It was a very pleasant week, certainly better than any mid-fi I had experienced, but the MET 7's let you hear just too much—the Sequerras out-classed the electronics. Indisputable conclusion: Use these speakers with first class electronics and front ends.

The sound? Well, if you are accustomed to a full range back end, *[Do you mean, if your mate has an arse like Rosanne Barr or Tom Arnold?—ED.]* then your first response will be disappointment. Mine was. Keep in mind that the 7's are part of a complex whole, cleverly designed to KISS (Keep It Simple Stupid) standards. You will just have to keep reading.

I commenced the formal listening sessions with *This One's for Blanton* (Musical Heritage Society 912142A). On "Do Nothing Till You Hear It from Me" the opening chords were spot on, attention getting, and real-world stable. The midrange was smooth, flowing and slightly sweet but with bite—surprising, considering the lack of foundation. What bass there was, was tight and tuneful, no bloat to try to fool the ear (a basic design flaw of many of the mini-monitors). In fact, I let the stylus drift on through to "Sophisticated Lady," just grooving to the tunes. I next introduced the Sequerras to Hindemith's Symphony in E Flat (Everest SDBR3008 silver label), a recording of complex, full orchestral crescendos (an addiction I had in my youth).

Indisputable conclusion two: These little guys play loud! They also play clean, delivering a believable dynamic range. The sense of an orchestra does not disappear with low volume nor collapse at high volume. On the down side, there was some musical confusion, but individual lines could still be followed. My feeling is that the presence of overtones (and modulations of missing fundamental frequencies) causes aural disorientation.

I lived with the 7's for three months, the only speakers in my jukebox. In a small room it might have been for years. In my room, knowing it was part of a more sophisticated system was enough to keep me satisfied. I did not miss the edge of metal domes, although the upper-range openness, clarity and sense of air was shy when compared with the high-end speakers we have come to know and love. (OK some of those cost multiples of whole numbers more.) In

an Audiophile rig, the MET 7 Mk. II's would be a recommended stepping stone—definitely a short list item. In a Music lover's system, on a budget or in cramped quarters, I believe they stand alone!

Now's the time to start piling it on, so let us look at the Met 8 Mk. II's, a single driver dynamic woofer which is placed under the MET 7's. These are large enclosures, 33" high by 13 ½" wide, with a sloping front 12" deep at the top and 17 ¾" deep at the bottom. Provisions for spikes are built in, and each unit tops the scales at 72 lbs, providing a stable base indeed. Component quality matches the 7's. The Met 8's are designed to be driven full range, requiring bi-wiring. Sensitivity is a high 90 dB for one watt at one meter (the same, naturally, as the 7's) and the 10" driver has a rise time of less than one millisecond/second. The current cost is $2,000 in oak or walnut for the pair. At the combined price point of $2,750, stands are no longer necessary, but cables are doubled; you are looking at a different animal with all new and tougher competition.

The combination of the 7's and 8's comprise another stand-alone system. The tonal balance is very "New Englandish," for those of you who remember. For those who do not, they deliver a very musical sound, in the best sense, with gently rolled highs at the very top, and bass that is about 3 dB down at 28 Hz—a balance that should be acceptable to all but the Hard Rock contingent. Remember, there is no electrical crossover between the units. The treble can be dressed to taste by a tweeter control pot above the five way input terminals. Using the same placement as the small speakers and making no other changes in the audio chain, I replayed the records mentioned above. After comparing the listening notes I came to . . .

Indisputable conclusion three: The bass is back! It is deep, clean, fast and tuneful—toe tapping tuneful—in fact, a virtually seamless foundation. Imaging is still first class, and ambiance retrieval has been greatly improved. I can never get over how important bass is to ambiance; it introduces the floor of the recording venue. I just could not resist, so on went *The Power of the Orchestra* (Chesky Records RC30). Play it again Sam: WOW! The ear/brain confusion caused by the missing octave certainly cleared up, and I found myself wondering how I could have lived so long without this.

A real eye opener was James Boyk's recording of Beethoven's Seven Bagatelles (Performance Recordings PR-5). With the keyboard stretched out between the speakers, each note was in a separate, consistent location. Individual notes could be easily followed as they decayed, even while other keys were struck. This is the fastest full range box system I have ever experienced. Shortcomings?

Unfortunately, yes, there is a slightly nasal quality, especially noticed on husky female voices, possibly a result of interaction between the two enclosures. Extended break-in tended to reduce but not eliminate the effect, and two tweaks helped further: First, the removal of the foam speaker covers from the 7's, but not the 8's; and second, placing three of the short Tip Toes under the 7's. This aided in drying up Peggy Lee's sinus congestion. An added benefit was the removal of a previously unnoticed smearing, which was easily confirmed by removing the tiny Tip Toes. I later used one cone 1/2" higher than the Mod Squad items to replace the rear Tip Toe, thus angling the front of the Met 7 down to put the tweeter more in line with my listening height.

This brings us to the Met 9 Mk. II, a unique version of Dick Sequerra's Ribbon tweeters. The 9's are housed in a

rectangular enclosure 8" high by 5 ¼" wide and 7 ½" deep, weighing 12 lbs each. The most unusual feature is clearly visible: The ribbon runs horizontally across the left, front and right sides of the box. To the best of my knowledge this is the only speaker to use a ribbon in such an orientation. Similar to the 7's and 8's, the 9s have a sensitivity of 91 dB at one watt at one meter with pink noise. Output can be adjusted with switch-selected attenuation over the range of 0 dB through 7 dB in additive fashion. The frequency band covered is from 3.5 to 50 kHz.

The Met 9 Mk. II's are designed to be seated atop the 7's, subject to four pages of instructions. Sequerra provides enough data to enable the use of the 9's with speakers other than the Futuresonics. The price of admission is $1,500. The three piece per side system clocks in at $4,250. I used an 18" speaker cable jumper to wire the 9's to the 7's. At this price level one may well be concerned with the synergy of a two box, one ribbon hybrid. So what happened?

Magic! What we have is a full range high-end speaker capable of holding its own in the $4,000 to $6,000 price range. The old "Voice of Music" became a "Stromberg-Carlson." [Isn't that a carburetor?—ED.] I reduced the Met 7 Mk. II's treble control from the marked nominal position to a setting of about 12:30 and left the 9's with all attenuators off.

Some records convey space, real space. One such is *Messe pour le Samedy de Pasques* (Musical Heritage Society HMS 4133), recorded April and May 1979. Plop on side two, "Messe de Toulouse," Anonymous ca. 1325, and listen to the decay of the chorus in the glorious reaches of the Church of St. Mary the Virgin on West 46th Street in Manhattan. With the addition of the Met 9 Mk. II's, the sense of the scale of the venue is reproduced very close to the way it sounded when I attended a performance at the church. The hand bells startle; I was transfixed. Another grabber was the flip side of *Double Play* (Andre Previn, OJC-157), "Safe at Home." You can almost see the triangle shimmer when it is struck. But there is more!

Which brings us to the last number, the Met 10–4 or 10–8 line source, $600 or $850 respectively. No Mk. II here—these are new additions to the heritage of the Futuresonics. The dash 4 contains four 2" cone drivers stacked in a housing 12.625" high, 4.25" wide and 6" deep with a 5.25" by 7" base. The dash 8 holds eight drivers in a unit 23" high.

R. Sequerra Assoc., Ltd. claims a dramatic increase in imaging and depth without altering the apparent mass of the perceived image. What the 10–4 does in my "Silvertone" *[Is that a guitar, or another old carburetor?—ED.]* is open up the midrange. No, that is not quite accurate. It opens up/expands this most message filled region of the media.

On many rigs, when the source goes from reasonable, gentle *pppp* to gigantic, raucous *ffff*, the midrange collapses from the sides. I am not talking about dynamics, (certainly there may be compression taking place), but about a congestion where the ensemble occupies less lateral space. The addition of a pair of 10's tend to correct for this phenomenon. The Hindemith Symphony, previously cited, assumed new levels of clarity, with many passages sounding softer than before. Since this may be room/rig sensitive, I would council careful audition. Suffice it to say that I will make a 10 part of my Juke Box. So what's it all about Alfie?

Indisputable conclusion four: The Futuresonics, in Mark II dress, is a remarkable speaker system with a set of compromises well suited to my taste and possibly yours. Give a listen, as you should to any gear, and see if you agree with me.

The system is fast, with a neutral tonal balance, and it conveys a great sense of detail without becoming analytic. What is omitted, in my listening room, is the bottom seven or eight Hertz and the perception of the shear force of air movement conveyed by the biggest, most expensive systems. Keep in mind that the modular design allows for some tailoring of balance, as the relative output of the 9s and 10s can be adjusted. Imaging can also be modified by the aiming of the various individual components. R. Sequerra Associates, Ltd. provide some guidelines in the notes supplied with the Met 9 Mk. II's and Met 10's, so let your ears be the guide.

There is one aspect I have avoided until now, the visual impact of the full system. It will not be to everyone's liking. In my case the level of performance and ability to tweak the system to a difficult room more than made up for appearances. You owe it to yourself to give a listen; this is a very special speaker system.

Futuresonics Mk. II: Met 7 Mk. II Serial # 1103 & 1104, $750 Met 8 Mk. II Serial # 137 & 138, $2,000 Met 9 Mk. II Serial # 73 & 74 $1,500. Met 10–4 Serial # 3 & 4, $600. R. Sequerra Associates, Ltd., 792 Pacific Street, Stamford, CT 06904. (203) 325-1791.

Associated equipment used in this review: a Nitty Gritty 3.5Fi record cleaner, a Clearaudio Goldmund mounted on a Grado Signature Tonearm astride a VPI HW–19 Mk. IV turntable with a VPI Power Line Conditioner and a Bob Young Line Filter. The Front End is completed with a Klyne Audio Arts 5a preamp. All signals routed by Straight Wire Micro-Link and Maestro. The Back End is comprised of an Electron Kinetics Eagle 2c and Kimber Kable 8TC. Support provided by a block of limestone, butcher block, little and big pointy things, and other tweaky bits too numerous too mention.

Sonic Frontiers *SFS-80* Amplifier

Joel Shumer

Sonic Frontiers, founded in 1986 as an Ontario based mail order firm, has become a major supplier of high-end audio electronics and parts to the serious audiophile and builder. The company has grown quickly, and now ships electronic gear to more than 15,000 customers across the world. A few years ago SF's principals, Chris Johnson, John Sloan and Chris Jensen, decided to take advantage of their unique opportunity to manufacture a state of the art tube amplifier while keeping its price reasonable. They were stocking some of the highest quality electronic parts in the world. Why not use them in a design of their own?

The SFS-80, which was introduced early in 1992, is a third generation design, having been preceded by a monoblock and a smaller stereo amp. True to their concept, parts quality in the SFS-80 is very high. Housed in a non magnetic stainless steel chassis are components from Edison Price, Gold Aero, MIT Multicap, Vishay, Holco, and Cardas.

Tapping some of the best talent available, Sonic Frontiers adapted a differential cascode circuit for the input driver stage designed by Joe Curcio, using

twin 6DJ8s with a regulated B+ supply. In the power stage a pair of KT99s configured in a pentode mode are the output tubes of choice, providing 80 watts RMS per channel. Expensive at $120 per matched pair, the KT99s should run for 3000 to 5000 hours, according to Chris Johnson. If so, they would outlast KT88s by a factor of five, making the operating costs of an SFS-80 rather low.

Across the rear of the chassis are three custom wound transformers made of grain oriented silicon steel. They are massive and are the primary contributors to the amp's total weight of 66 lbs. Output impedance is set by the factory at 3.6, 8.0, or 14.4 ohms. Simple instructions for changing impedance by rewiring the taps on the output transformers are included.

Beneath the transformers on the back plate of the chassis are a pair of custom Cardas RCA phono jacks, rugged Edison Price speaker posts, which accept spades, bare wire, or banana plugs, and a receptacle for a detachable six foot grounded power cord.

An on/off switch and a bias meter are located on the front panel. By rotating a knob on the top of the chassis, each output tube can be individually selected and its bias read. Inserting a screwdriver through a hole next to each KT99 and turning a small set screw adjusts the bias. In practice this has required little attention.

In fact, aside from its good looks the SFS-80 attracts very little attention. It turns on without pops or thumps and turns off just as quietly. Connected to the Quads, which have an 86 dB/1 watt efficiency rating, the SFS-80's noise floor is inaudible six inches from the speakers. And they run cool. Even after twelve hours of continuous use the transformers are only warm. Not hot, just warm.

The SFS-80 gives every indication of being well made and reliable. Parts quality is high, the 8x12" heavy duty circuit board has a neat, open design. Cardas custom wire is cleanly soldered, connectors are rugged, and tubes are well spaced, further contributing to the amp's low operating temperature. Certainly the people at Sonic Frontiers have confidence that the SFS-80 will run dependably and trouble free. They provide a five year parts and labor warranty on the amp and an unusually long one year warranty on the Gold Aero tubes.

THE YARDSTICK

Measuring an amplifier's distortion, frequency response, power, noise, etc. is usually done numerically in terms that are absolute. But audiophiles find it more meaningful to describe the performance of an amplifier relative to past listening experiences in general and other pieces of equipment in particular. When an audio component is being judged as good or perhaps not so good, it is important for the reader to know the reviewer's yardstick of comparison.

For most of my evaluation of the SFS-80 it was run alternately with an Audio Research Classic 60, which has been my

amplifier of choice since the spring of 1989. The CL-60 has worked beautifully with the Quad Pro-63's, producing a marvelous soundstage, a smooth midrange, an extended top and bottom, and a more controlled bass than any other tube amp I've heard. Transients are clean and there is little trace of grain or harshness. Despite its age, the Classic 60 continues to garner enthusiastic reviews, and remains the lowest priced amplifier in *Stereophile's* "A" category of recommended components. In the Winter, 1991 issue of *The Audiophile Voice*, Robert Reina gave the CL-60 what amounts to a flat out rave review. After extolling each of its virtues one by one, Mr. Reina concluded that the CL-60, "... is the most significant upgrade I have ever made to my reference system and the most significant product I have ever had the pleasure of reviewing."

Using the CL-60's performance as the yardstick to take the measure of the SFS-80 places the Canadian amp in competition with one of the world's best. The CL-60 costs $750 more, but the two amps are pretty much the same in size, weight and power output. I pulled the ARC amp from my system and replaced it with the one from Sonic Frontiers. As they say in show biz, the Classic 60 would be a tough act to follow.

LISTENING, PART I

For the first two weeks I planned to listen to the SFS-80 informally. There would be no other amps in my reference system; I would listen somewhat casually but jot down reactions as they came to mind. A favorite LP recording of mine is the Bernstein, Marilyn Horne, *Carmen* (DG 2709 043), recorded by Deutsche Grammophon in New

York in 1973. If only most DG LPs sounded as good as this recording our shelves would be filled with records from this company. Via the SFS-80 my immediate assessment was, "laid back, lots of space, very natural." As I played through the first act I noted, "choruses of men and cigarette girls are open, transparent, and extend beyond the Quads in width and in substantial depth. Marilyn Horne's voice is dark, honey colored, but totally believable. Her tambourine in the Habanera is a bit dull, and although the overall sound is not as bright as I remember, it sounds more like a live performance."

A CD of the Takacs String Quartet playing the Dvorak Opus 96 Quartet (1989, London 430-077-2) had a warm, dark, vibrant string tone, and the cello had a weight and sonority that I hadn't expected.

Listening to the final movement of the Byron Janis/Dorati recording of the Rachmaninoff Third Piano Concerto, first on LP (Mercury SR 90283), and then on the CD reissue (Mercury 432 759 2), I noticed that strings sounded luscious, with good bite on the attacks but without shrillness. Bass was big but a bit murky. Piano tone was rich and believable. Attacks seemed slow and rounded, with slightly rolled highs, but the piano sounded like a piano. (And as an aside, Aren't LPs great?)

Ana Caram's voice from *Rio after Dark* (Chesky LP JR-28, CD JD-28) seemed dark and a little too full. I wrote in my notes: "Ana's voice is more like a mezzo's than a soprano's. It should be lighter and brighter, but in general the recording is warm, intimate and involving."

I returned from Tower Records with several 1959 Bruno Walter Odyssey reissues, among them a stunning recording of the Brahms First Symphony (Odyssey 44827). It was all there, wide dynamics, warm strings with a golden sheen, large gutsy bass, a strong sense of space, and a tonal/harmonic balance reminiscent of being in a concert hall. Was I responding to an excellent transfer from a beautifully recorded thirty year old master tape, or was the SFS-80 working some magic in my system?

I took the LP of Walter's Beethoven's Fourth Symphony (Columbia MS6055) and a CD reissue of the universally admired Walter recording of the Beethoven Sixth (CBS MK 42012), intending to play parts of these familiar recordings as a reference for comparison. I started with the CD of the Sixth. Perhaps there was less detail than I remembered, but the recording engulfed me with its warmth and vibrancy. I was aware of the recording hall in a way that was new as well. It was larger and better defined. I found myself listening more to the music and less to the technology of the medium. Putting pencil and pad aside I listened to the rest of the recording for what it is: an extraordinary interpretation and performance of Beethoven's "Pastorale."

The LP of the Beethoven Fourth, while pretty good, is not in the same league as the recording of the Sixth. Nonetheless it allowed the SFS-80 to exhibit those same qualities: upper octave smoothness, an enriched midrange, full bass, and those ambient cues that provide a sense of the recording venue. Certainly the SFS-80 was doing some things that were "very right" when it came to the reproduction of classical music as it sounds in a concert hall.

LISTENING PART II

The time had come to compare the SFS-80 directly with the Classic 60. Both amps were placed on Target stands, backsides facing into my listening area. To keep the amps warm and the sound stable, both amps were left on while I switched connections. Pull speaker cables, pull interconnects; insert interconnects, attach speaker cables. I got so good I could make the switch in less than thirty seconds with never an audible protest from the Quads.

CDs were used for almost all of the comparisons. I would punch in a short section of music on an "A" to "B" loop, hear it a couple of times via one amp, hit the pause, switch cables, adjust level, hit pause again, and hear the same short selection via the other amp. Over a period of two weeks and after dozens of comparisons, I found that I had accumulated some twenty pages of notes. Here are a few representative examples:

Kiri Te Kanawa (London 417 645-2) Tracks 1 and 3:

SFS-80—Kiri's voice is open, smooth, rich, dark, a bit too chesty. Strings are golden hued. Good, tight bass.

CL-60—Voice is even more open, airy, better upper extension. Chestiness is gone but voice is slightly metallic. Strings are cooler, harder. Good bass, better controlled.

Preference: SFS-80.

Jazz at the Pawnshop (Proprius PRCD 7778), Track 1:

SFS-80—Marvelous sense of space, of being in the jazz club, although the lo-

cation of the instruments is too generalized. Overall, the sound is laid back, relaxing. Bass is a little too big.

CL-60—Space seems smaller but more specific. Transients of drums, symbols, and vibraphone are less blurred, cleaner. Bass is better controlled. I like the comparative coolness and greater articulation.

Preference: CL-60.

Dvorak: Piano Quartets (Dorian DOR-90125), Track 4:

SFS-80—Warm, rich, reverberant. The instruments have weight and substance.

CL-60—Strings have more bite but sound too thin. I miss the burnished quality of the SFS-80. Piano is good on both recordings but cooler on the CL-60.

Preference: SFS-80.

Shirley Horne: *You Won't Forget Me* (Verve 847 482-2), Tracks 5 and 7:

SFS-80—Her voice is warm, rich, involving, dark, and intimate. Piano tone rounded and full but leading edge seems to be softened. Drums and bass are warm-toned but lack crispness.

CL-60—Horn's voice is brighter. Increased upper extension produces a quality of open airiness. Bass has a greater sense of solidity. There is more energy and rhythmic drive.

Preference: CL-60.

Mahler: Symphony No. 2, Bernstein (DGG DG 423 395-2), opening section:

SFS-80—Strings are slightly thin but warm. Cellos and double basses have weight and substance. There's a good sense of space.

CL-60—There are more details and transients are sharper and faster. String tone is too thin and a bit steely. Transparency is greater but there is a disengaging coolness.

Preference: SFS-80.

After these and many other comparisons I came to a few tentative generalizations concerning the strengths and weaknesses of the SFS-80 *vis a vis* the CL-60:

Upper octaves: Good extension but slightly rolled off. Warm, smooth, completely lacking in shrillness. Open and airy but not as airy or as extended as the CL-60.

Upper mids: Very smooth, liquid, warm and golden. Strings, brass and piano have a convincing tonality, but leading edges are rounded. On dull recordings mids can be closed in and glassy.

Lower mids: Rich, full, and reverberant. Tonality is burnished but darker. Always smooth.

Upper bass: Cellos and piano take on greater sonority and weight. Recordings with strong bass may become boomy.

Bass: Rich tonal balance. Slower and less articulate than the CL-60.

Transparency: Open and clear. There appear to be no veils between music and listener, although a direct comparison with the CL-60 suggests greater clarity and resolution are possible.

Transients: Never harsh or spitty. Good weight and impact. Leading edges on percussion, plucked strings and woodwinds are slightly blurred.

Dynamics: Both micro and macro dynamics are consistently believable.

Spatial Information: Imaging is very good, although the CL-60 is more precise. The ability of the SFS-80 to recreate the ambiance and space of the recording hall can be stunning.

LISTENING PART III

Remember the old adage, "You can't see the forest for the trees?" These descriptions of specific aspects of the SFS-80 are a bit like describing individual trees. It really doesn't do justice to the SFS-80 as a whole. During the weeks of analytical comparison I also had several lengthy listening sessions, although they hadn't always been planned that way. LPs and CDs that I had intended to merely sample became intriguing; often, as in the case of the Beethoven Sixth mentioned earlier, I let the recording play through to the end. It wasn't so much a difference in sound that kept my attention—usually that was immediate and obvious—rather there was something different that I hadn't heard before in musical content. It was as though I were getting new insights into the interpretation and performance of recordings I had heard many times before.

These longer listening experiences are necessary in order to discover the SFS-80's most important assets: First, it has great musicality with little artifice; second, it has a heightened ability to draw the listener into the emotional content of the performance. I'm not sure that I could demonstrate either of these qualities. Illustrating the superior transients of the CL-60 or the warm bass bloom of the SFS-80 can be done easily in a few minutes. But after weeks of listening to the SFS-80 I'm sure it has this quality of seductive musicality as well. If we audiophiles are a blend, part music lover and part audio enthusiast, then the SFS-80 most strongly appeals to that part in our mix that places a premium on musical values.

CONCLUSION

The SFS-80 is not an amplifier for every audiophile shopping in its price and power range. Those in search of the last word in upper and lower extension, bass control, and fast transients should look elsewhere. But for audiophiles in search of warm, open, natural strings, rich burnished brass, rounder golden hued woodwinds, voice and piano, this amplifier is for you.

In the last few years I have had lengthy listening sessions with amplifiers from Krell, conrad-johnson, Quicksilver, Goldmund, McIntosh and Audio Research in my system. None of these has come as close as the SFS-80 in reminding me of the tonal balances and harmonic correctness of the concert hall. None of the others has so easily seduced me into extended listening sessions.

Owning three amplifiers in the 60 to 125 wpc bracket, I certainly did not need a fourth. But temporarily I've put aside my plans for system improvements. The SFS-80 is now a permanent fixture in my listening room, providing an alternate reference. I'll keep using the Classic 60 some of the time, but for warmth and musicality I'll be hearing most of my recordings via the SFS-80.

POSTSCRIPT

Since writing this review, I've made two changes which, when taken together, have worked to substantially improve the sound of the SFS-80. 48 square feet of Sonex had been used to suck out a few dB of mid and upper frequncies, allowing the Quad 63s to seem fuller in the upper and mid bass. I discovered after repainting my listening room that not only was the Sonex not needed, but the SFS-80 became more dynamic, better focused, and with a bass more in balance with the rest of the frequency range. The second change was a switch to Cardas Quadlink 5 speaker cable. Bass became tighter, upper frequencies more open and extended, transients

noticeably faster, and imaging more specific. Before these changes the SFS-80 had been one of two amplifiers I used in my system, but now I am listening to the Sonic Frontiers amp exclusively. To anyone looking for an amplifier in its price range, I can wholeheartedly recommend the SFS-80 with great enthusiasm.

Sonic Frontiers SFS-80, all tube, 80 watt per channel stereo amplifier. Dimensions: 18 inches wide, 14.5 inches deep, 9 inches high with tube cage. Weight: 66 pounds. Price: $2750.
Sonic Frontiers Incorporated, 760 Pacific Road, Unit 19, Oakville, Ontario, Canada, L6L 6M5. Telephone: (416) 847-3245.

Associated components: Linn LP 12/Lingo turntable with Linn Ekos arm; Koetsu Rosewood Signature cartridge; McIntosh MCD 7007 CD player; Audio Research SP11 Mark II preamp and Classic 60 amplifier; Quad Pro-63 USA Monitor speakers on Arcici stands; MIT 330 SG interconnect; MIT 750 SG and Straight Wire Maestro speaker cable; Tice Power Block; Bob Young Line Filters; Clarity Audio silver power cables; Sonex; Tube Traps; VPI Bricks; Goldmund Cones; Target equipment stands.

Audio Research *Classic 120* Mono Amplifiers

Bill Wells

Audio Research Corporation (ARC) has long been at the forefront of research and development on tube electronics. At times, however, they have delved into solid state applications for their various electronics, and have become renowned for their ability to combine elements of both solid state and tubes. This design approach was first evidenced in their highly acclaimed SP-11 preamplifier introduced back in 1985.

This hybrid technology was subsequently applied to a new breed of ARC power amplifiers. In 1988, the "Classic" series of amplifiers was born with the mighty model 150 monoblocks. At the same time, the companion model SP-15 was introduced as the new ARC flagship preamplifier, replacing the SP-11. Additional Classic series amplifiers, the single-chassis models 30 and 60, were introduced in late 1988 and early 1989 respectively. The Classic 120 amplifier, which came along in 1990, is ARC's latest, most refined "Classic."

As a previous owner of various late model ARC products, including some of their hybrid units (SP-11 and Classic 150), I am quite familiar with the over-

all sonic character of their electronics. The ARC sound, if you will, has been known for its high resolution and somewhat lean overall character. The Classic series amps, while basically following in that tradition, have created what I feel to be a new ARC sound. With the switch from 6550 to KT88 output tubes in the Classic series amps (circa Spring 1991), the sound is now noticeably fuller in the bass and displays greater authority. Additionally, the midrange is harmonically richer, with a nice sense of bloom, largely ameliorating the previously noted leanness. Yet this new sound maintains the earlier characteristics of high resolution and superb detail overall—it's just that much more musically natural.

During a recent face-to-face interview, Terry Dorn (ARC's vice president for sales & marketing) explained how (and why) the 120 came to be. According to Dorn, ARC wanted to offer an amplifier preserving much of the performance of the flagship Classic 150 but at a lower price. The 120 is, in fact, a direct descendant of the model 150. With the 150 retailing at $10K and the highly acclaimed Classic 60 at $3495, a big gap existed. Dorn says ARC wanted a product priced somewhere between the two units, with adequate power for a wide range of loudspeakers, and the advantages of dual mono design. In order to bring the price down from the Classic 150, ARC engineers analyzed what could be readily sacrificed without compromising the sound.

What ARC finally came up with was the elimination of several of the Classic 150's operating features, including the internal fan control network, stand by mode circuitry and input attenuator switches. Whereas, the Classic 150 uses an all solid state (FET) input stage with very sophisticated protection circuitry, a simpler front-end circuit/input stage was developed for the 120. Effectively, this cleaned up the signal path of the 120. The Classic 120 uses a driver tube as the final portion of that stage and eliminates some of the protection circuitry found in the 150. The Classic 120 has also been configured into a smaller, more manageable package both in terms of size and weight. Part of this weight and size reduction is due to the somewhat smaller power and output transformers used in the Classic 120. The net effect of these changes, pricewise, is a reduction of $3000 off the retail price of the Classic 150.

Most of my critical listening, during this review period, was done with the wonderfully musical ProAc Response 3 loudspeaker. The combination of Classic 120 and Response 3 is quite synergistic and makes for some very musically compelling sound. In addition to using the ProAcs, a fair amount of listening was done as well with the highly musical Symdex Epsilon Signature (reviewed in Issue #1). Both pairs of speakers are dynamic loudspeakers, are nominally rated as 8 ohm loads and are moderately efficient (approximately 88 dB). The 120 seemed to be right at home with either pair of speakers.

My initial impression of the Classic 120 was largely favorable. As of this writing I have had a pair in service in my reference system for about a year. Aside from a couple of output tubes that decided to take a hike, this amp has been generally quite reliable. When I first put the 120 in my reference system, I was immediately impressed with its high degree of transparency and openness. The midrange presented itself as being very detailed, yet liquid and quite musical. The treble was extended and very open. Delicate and subtle musical nuances became just that much more apparent. The bass was punchy and with good impact. The midbass, in particular, had very good kick, being quick with no apparent overhang. Dynamics were very impressive and the 120 just seemed to let the speakers come alive and do their thing. While the sound from the Classic 120 was largely consistent with my ear-

lier experience with the bigger Classic 150, there were differences. From what I could tell, most of these differences were positive and in favor of the 120.

In more fully describing the overall sonic character of the Classic 120, I find their tonal balance to be largely neutral and quite musically natural. Their sound neither smacks of being in the typical tube nor solid state camp. Instead, what I find is a very nice blend of attributes from both technologies. With the KT88 output tubes, the 120's overall sound is full, lush and harmonically rich from top to bottom. Additionally, there is superb detail throughout, with a greater sense of clarity and transparency beyond the models 60 and 150. The overall sonic character of the Classic 120, with KT88s (as contrasted with the amp when equipped with 6550 output tubes), provides a seamless transition from one frequency range to another.

ARC's newer Classic series of hybrid amplifiers offer bass performance that is actually quite surprising. Their bass is noticeably more powerful, effortless and definitely better controlled than earlier ARC tube designs. In the case of the 120, the bass is full and extended with good definition and impact. While the overall bass performance of the Classic 120 is quite solid, the deepest bass is somewhat lacking in ultimate authority and control. For example, try listening to the authentic oversized war drums from the soundtrack to *Glory* (actually, they are replicated 30 inchers, I believe). These instruments can produce sounds with considerable weight and power in the lower frequencies. The 120 does a very credible job of reproducing these sounds. However, as a matter of comparison, the 120 does so with somewhat less visceral impact than the ARC Classic 150. Also, on Weather Report's heavy hitting jazz/fusion album *Sweetnighter*, there is a fair amount of deep, powerful and dynamic electronic bass. Again, the 120 does a very credible job throughout most of the bass range, on this album, giving up only a slight degree of performance toward the very lower frequencies. What is missing, from the 120 is the full degree of slam and impact that is otherwise possible with the 150 and other much higher powered designs, including some gut-crunching solid state beasts.

Much of my in-home listening is done to jazz recordings containing plenty of upright acoustic bass. This instrument can tell a lot about an amplifier's ability to render good quality sound in the bass region. For example, on Chet Baker's album *You Can't Go Home Again* (A&M Records LP 0805), Ron Carter provides an object lesson in acoustic bass mastery. On the title cut, he is all over the lower bass scale with finger dexterity and string plucking galore. The 120 renders these sounds quite authentically and does not lose its composure. It delivers good power and authority on this album along with very good detail. This allows the listener to hear all the subtle fingering of the strings by Carter, enhancing one's listening enjoyment and appreciation of the fine artistry displayed. Another good example of the 120's performance in this area can be heard by listening to The Dave Holland Quartet's album titled *Extensions* (EMC 841-778-4). Holland is also a master of this instrument, and because of the 120's overall timbral accuracy, Holland's instrument is quickly and easily distinguishable from Carter's.

I especially like the simplicity of recording techniques often employed with traditional acoustic jazz. For example, on Ernestine Anderson's *Never Make Your Move Too Soon* (Concord Jazz 147), the 120 really brings forth her compelling vocals, along with Ray Brown's acoustic bass work and Monty Alexander's piano performance in fine fashion. Through the 120, the interplay of these artists is brought together as one but with distinctively separate musical iden-

tities. Also, on such fine jazz albums as McCoy Tyner's *New York Reunion* (Chesky JD51), or *The Essence* (DMP CD 480) featuring Billy Higgins, Ray Drummond and Hank Jones, the 120 provides a sense of musical naturalness and tonal correctness that is very convincing. Acoustic piano, from both of these albums comes through with proper weight and power, with the fundamentals and harmonics rendered very realistically. There is a warmth and richness very reminiscent of the real thing.

It is above the lowest octaves where the 120 really starts to strut its stuff: The mid and upper bass region of the 120 displays a quick and dynamic character with proper authority and impact, yet with a very realistic degree of warmth and fullness. As a result of this natural warmth, the 120's deep bass deficiency is somewhat ameliorated. This very slightly negative aspect of the 120's performance will depend largely on the speakers used and the type of musical selections the listener prefers.

On Pat Coil's excellent fusion album *Steps* (Sheffield CD-31), there are some very good examples of heavy hitting sounds in mid and upper bass range. On the track "The Wisdom To Know," the drums, bass and percussion really get cooking. The 120 reproduces these sounds quite effortlessly and with impressive realism. At no time have I sensed any significant degree of strain with this amp on either pair of speakers. Admittedly, I don't play my system at ear shattering, window cracking or foundation shaking levels. However, during one of my recent and rather spirited listening sessions, my oldest son (age 15 and a "sometimey" aspiring drummer) commented about how powerful and tight things sounded (not to mention how loud it was!). The 120 was really doing its job, and its performance in this area was very impressive.

However, the best of this amplifier (the magic, if you will) actually lies elsewhere in the audio spectrum. As with the heralded Classic 60 and highly acclaimed 150, the magic of the 120 really lies in the midrange. What it provides, from the lower to upper mids, is a very nice sense of bloom, with lush, harmonically rich detail that is quite musically authentic. The 120 offers the midrange in a glorious manner, yet it avoids any of that "in your face" listening perspective that sometimes has been attributed to the so-called classic (no pun intended) bulging tube midrange. The tonal balance/perspective of the 120 is just about right, being neither forward nor laid-back. With the 120, there is an ever so slight immediacy and prominence, which simply enhances the listener's feeling of being there. This provides a rather intimate, captivating and seductive sound. Along with this is a high degree of inner detail, resolution, timbral accuracy and liquidity.

Female vocals are especially thrilling with this amp. On Shirley Horn's superb album *You Won't Forget Me* (Polygram/Verve 847 482-4), the 120 conveys her voice, and all the musical nuances, with exquisite intimacy and superb naturalness. Another fine example of how the 120 so convincingly reproduces female vocals is Sarah Vaughan's album *Crazy and Mixed Up* (Pablo LP-2312-137-2). Sarah's voice is truly wondrous, and the 120 will let you hear all of the beautiful shadings and resonances in her voice. Vaughan has an uncanny ability to slip and slide all over the vocal range while often bending notes from one part of the scale to another. Through the 120, you will even more fully appreciate her unique talents.

Male vocalists are also rendered quite authentically through the 120. Try listening to Johnny Adam's totally bluesy baritone on his album titled *Walking On A Tightrope* (Rounder Records LP 2095), or Aaron Neville's pulsating tenor on *Warm Your Heart* (A&M Records CD-70521-5354.2). In both cases, these artist's voices are rendered very

convincingly through the 120, with numerous subtle details emerging in a very intelligible manner. Although the sound through the 120's midrange is very detailed, it has a good sense of body, fullness and liquidity. With the KT88s in place, sounds in this region are just that much better fleshed out than ever before.

Besides voice, which I believe is the most beautiful instrument of all, I often listen to piano and saxophone. Both instruments are quite revealing of midrange truth, providing a broad range of sounds along with powerful dynamics. Try listening to the superbly musical album *The Blessing* by Gonzalo Rubalcaba (Blue Note CDP-797197-2). The 120 renders the piano on this album quite authentically. There is a fine mix of delicate and sweet, yet during the more dynamic passages the sound, through the 120, remains flowing and coherent.

Moving up higher in the frequency range, the 120's treble reproduction is very extended and silky smooth, with lots of clarity and air. At no time does the 120 add brightness or grain. Delicate sounds such as cymbals and percussive bells are rendered very realistically. Nothing in this region sounds etched or artificial. Leading edge transients have a quickness and speed with the proper decay. Upper harmonics are quite evident, and shimmer in a very pleasing manner.

With the 120 powering the ProAcs, the stage extends well beyond, around and behind the speakers, enhancing the spatial illusion. This is accompanied by precise and pinpoint image focus. The 120 provides a high degree of image specificity, which creates a visual/acoustic sensation of simply being there. Try listening to the a cappella singing group Take Six on their Grammy award winning album *Take Six* (Reprise LP-9 25670-2). Each performer has his respective place on the stage, with the perceived size and proportion very realistically portrayed. After having seen this group perform live, I can say that the 120 handles this area of sonic performance exceptionally well.

Along with outstanding soundstaging, the 120 displays a high degree of clarity, openness and air. Voices and various instruments are reproduced with their own acoustical space. Ambiance retrieval is enhanced, and it becomes quite easy to hear deeply into the soundstage. Along with this, subtle (but significant) differences in arrival and decay times of the various performers are discernible. Provided the recording is up to par, the 120 will let you hear the size and type of the recording environment. This effect enhances the illusion of being a part of the performance. On Milt Jackson's album *Mostly Duke* (Pablo 2310-944-2), you can perceive a nice sense of the setting for this live recording. Along with this, the sound of Milt's vibraphone will give you a wonderful sense of spaciousness as you hear the notes decay and float into air. The vibraphone's transients are also reproduced in first rate fashion by the 120.

Is the ARC Classic 120 perfect? Well, as much as I like this amplifier, I believe it falls short of being able to do a truly adequate job with some of the larger, more complex loudspeakers (Thiel CS5s, Avalon Ascents, and very likely some of those low impedance, low efficiency planar type loudspeakers). However, when properly matched with the right type of speaker (moderate impedance and/or higher efficiency), the results can be rather outstanding. Although the 120's 110 watts is for the most part adequate, I fully realize the benefits often derived from more power (such as greater low frequency drive and control plus an overall ease and effortlessness. The 120's limitations in this regard have honestly not offended me much, due to the synergistic match with the speakers employed in my system. Another shortcoming of the 120, although not of a sonic nature, has to do

with the fans. For the most part they are pretty quiet. Yet at times, when my listening room's ambient noise level is quite low, and during very quite musical passages, I am aware of them being on. I consider this minor—a quibble, if you will.

All-in-all, the 120 is an outstanding amplifier. Properly matched, they are capable of rendering a level of sonic performance that will likely delight many audiophiles and music lovers. Yes, they have flaws, but none are fatal. They are one of the more musically natural sounding amplifiers I have had the pleasure to use in my system. They combine the strengths of being highly detailed and articulate yet very musical. The midrange is harmonically rich, lush and liquid while offering a wealth of detail and resolution. The bass is very good overall and offers good definition as well. The treble region is very open, effortless and extended. Dynamics are rendered realistically, with transients having proper leading edge speed. Plus, the decay of sounds is handled quite realistically. Soundstaging is superb, with precise placement of images. Ambiance retrieval from all dimensions of the stage is handled quite well, with images in the far reaches of the soundstage illuminated properly.

At $7000, the ARC Classic 120 is not cheap. By comparison, it is twice the price of the outstanding Classic 60. However, in my opinion, the 120's overall increase in performance over the 60 definitely warrants this difference. The 120 offers significantly greater power delivery than the 60. This allows it to work far better with a wider range of loudspeakers. Also, the 120's monoblock configuration takes the already outstanding soundstaging and imaging performance of the 60 to new levels. This, combined with various refinements, allows the 120 to have greater transparency and openness than the Classic 60—and even ARC's flagship Classic 150. Based on my experience with the 150, I feel the 120 gives anywhere from 90–95% of the 150's overall performance in most areas—and even higher in others. In this regard, with the 150 retailing at $10K, the 120 almost seems like a bargain.

POSTSCRIPT

Recently ARC introduced a new series of amplifiers, designated the V-35, V-70 and V-140. Each amp will continue to utilize circuit topology similar to that of the Classic series, but these new hybrids employ KT90 output tubes versus KT88s for the Classic series amplifiers, and are designed for fully balanced operation. Each amp has a slightly higher power output rating than its nearest Classic series unit, and correspondingly each has a somewhat higher retail price.

The new V series counterpart to the Classic 120, the V140, operates in a fully balanced mode, delivers approximately 140 watts per channel of triode power, uses KT90 output tubes and retails for $7995. The 120 operates single ended (balanced operation is optional), delivers approximately 110 watts (per channel) of triode power, uses KT88 output tubes and retails for $6995.

The Audio Research Classic 120 mono amplifiers. Price: $6990 per pair. Audio Research Corporation, 5740 Green Circle Drive, Minnetonka, MN 55343. Phone: (612) 939-0600. Serial numbers 01249001 and 01249002. Reviewer owned.

Associated Equipment: Convergent Technologies SL-1 Signature preamp; Audio Research LS1 Line Stage; Versa Dynamics 1.0 turntable/arm combination; Oracle IV turntable/SME Type V tonearm; Benz Micro MC3 moving coil cartridge; Esoteric P2/D2 digital playback system; Audio Research DAC 1-20 converter; California Audio Labs Tercet

MKIII CD player; ProAc Respons 3 loudspeakers; Symdex Epsilon Signature loudspeakers; NBS King Serpent Interconnects & Reference Standard digital cable, AC power cords and speaker cables (bi-wire); XLO interconnects and digital cable; Purist Audio interconnects and digital cable; MAS masTER mat; VPI bricks; Goldmund cones.

The Cello *Palette* Preamp

Russell Novak

First, a tirade. You can separate the real music lovers from audiophiles by looking at their music collections. An audiophile will have one of this and one of that. One Mahler, one Miles Davis . . . a Sheffield, a Telarc *Star Wars*, an organ CD, a *Belefonte Returns To Carnegie Hall* (one more refrain of Dear Lisa and I'll vomit). When audiophiles speak, they say, "Listen to this bass" or "I won't listen to stuff on that label." But a music lover will show patterns in their collecting. They'll have an expanded Mahler or Miles section. They'll have recordings of associated musicians and stylistically similar composers. They'll specialize in eras or types of music. They will collect music regardless of the label or the vintage. When they discuss a recording, they'll speak about the performance. In short, you'll be easily able to determine what their taste in music is. The music is the whole point. We have no excuse to spend the huge sums we do on equipment if it does not help us enjoy the music more.

Just yesterday I received an unsolicited "review" in the mail, no return address. It portrayed itself as a memo from an audiophile to his friends on the subject of an amplifier he was "testing." Since when do interpersonal communications get mailed to everybody and their brother? This guy was running around, amp under arm, to homes and showrooms, testing it. And what did they listen to? CDs of *Test Record One* and Mickey Hart's *Planet Drum*. Changing interconnects and polarities as they went, at last they reached that great catharsis I knew would come: The bass was tight and the highs were smooth. Thank God. Run right out and buy one.

I'm kind of circling in on today's subject in order to stimulate your thinking. When you audition equipment, do you bring along audiophile (read "accurate") recordings? Or do you bring along what you actually listen to? Hopefully they are not the same thing. We have a classic dichotomy in the audio business. We are working with relative values and striving for absolute accuracy. You already know the arguments. Our software is recorded and played back with an infinite number of variables and yet we will selectively use certain recordings to make value judgments.

Sometimes this is valid, as when judging a unit's ability to unravel complex orchestral passages or to recreate instruments in their original positions. Most often however, we are judging frequency balance—the amount of energy at different frequencies. That's where you get into trouble. That's where the variables are greatest. If you tune your system by ear, matching components and wires to get the sound you believe accurate, and you use just a few audiophile recordings or one label, you run the risk of skewing the reproduction of

other recordings. Even after making the best choices of equipment, you are likely to still end up with deficiencies.

Then there is the matter of personal taste to further complicate things. And what if you like the performance of a flawed recording? If you hold that performance determines what you listen to, you will make choices regardless of sound. One thinks of the Herbert von Karajan's "La Mer" on a (shudder) '60s Deutsche Grammophon. Having selected a performance, can you then make it more musical and therefore more enjoyable?

My experience has been that the better the equipment is, the better it will make even flawed recordings sound. One might think that the bad recordings become even worse with good equipment, but that is not the case. The improvements gleaned in all areas appear to compensate for flaws. They are still there, but the total experience gets better.

That might argue in favor of the purist approach to designing and buying equipment, and to some extent it does, but Puritanism still doesn't correct faults in recordings, and in some cases those faults may be severe enough to prevent you from listening *at all*. One thinks immediately of the Ella Fitzgerald/Louis Armstrong collaborations on Verve. These are superb performances that are severely hampered by bloated bass and rolled off treble, a chronic condition in early Verves. *Is there a way to compensate for deficiencies in recordings without losing the purity of sound gained from the straightwire approach?*

Historically, equalizers have been used to correct frequency aberrations, but this solution has been shunned by high-end audio. Equalizers mess up correct phase relationships, collapse the soundstage, and desiccate the sound with their cheap transistor circuitry. In 1985 Cello brought forth the Audio Palette, an equalizer of original design intended to retain all the attributes of high end sound. It was and is very expensive (currently $18,000 with Master Supply), beyond the reach of most audiophiles. Yet the consensus was that there was very minimal degradation to the sound compared to "straight line" techniques. Many were sold to recording studios that care about the sound they produce for use in those situations where recording errors cannot be corrected.

Now, 7 years after the introduction of the Audio Palette, Mark Levinson and Tom Colangelo have provided a solution to the question posed two paragraphs above. Recent improvements in IC technology, discussed below in John Schleisner's commentary, make it possible. At $6500 ($2000 more with external-phono unit), this is a much cheaper but still pricey solution. Above and beyond the parts and manufacturing cost, you are paying for Mark and Tom's design expertise, and the fact that you are buying a preamp along with the equalizer.

PHYSICAL DESCRIPTION

The Palette is a two chassis unit consisting of a power supply and the main unit with a 10' umbilical cord between. The main chassis stands 7.25" high on the shelf, is 13.25" deep and 19" wide, with a silver face plate and a brushed aluminum chassis. Graphics have recently been updated to resemble the Audio Palette. There are 12 knobs, two rows of six. The top row contains a five input selector switch, a tape monitor selector switch for two tape loops, an "in" and "out" switch for the EQ, the master gain control, and two knobs labeled "input left" and "input right." These are used as level and balance controls when in the EQ mode.

When an EQ boost or cut is made in the active EQ mode, these knobs are adjusted so that overall level remains the same as when the EQ is out. The equalization in/out switch is then flicked

back and forth to compare the two signals, an extremely handy comparison technique that eliminates the variable of changing levels while contouring frequency. One thing worth noting is that in the EQ out position, the unit bypasses the "input left" and "input right" controls so that the ability to balance channels is also eliminated. I didn't find this much of a problem, but those who want to use these controls to balance channels, should realize that the EQ circuitry will stay active.

The bottom row of knobs provides the EQ adjustments with the bands marked 20 Hz, 120 Hz, 500 Hz, 2 kHz, 5 kHz, and 20 kHz. These are marked in increments indicating the actual boost or cut in dB. This is an improvement over the relative and meaningless 1–10 scale used on most equalizers.

The rear of the unit has balanced outputs (Fischer connectors), two pairs of unbalanced outputs, 2 record out jacks, 5 pairs of input jacks and the connections to the power supply. Levinson feels that Fischer connectors have much better signal and ground contacts than XLRs which, he states, use bent sheet metal contacts inside the connectors and are not sonically transparent.

Internally, there are switch settings which allow you to adjust the gain of the preamp when operated in the unbalanced mode. One design consideration with this unit is the ability to use it at the listening position to more accurately judge the effects of the controls. It has a 1 M ohm input impedance to allow long cable runs from the signal source without degradation. Cello suggested that its own Cello Strings interconnect, a Litz configuration with low capacitance and inductance, is ideal for this application.

Although the chassis is fairly heavy at 21 lbs, my experience over the last 10 months with minimizing resonances on components caused me to install this unit on Bright Star Audio's Big Foot sand base and top it off with Little Rock, a chassis damping weight (see last issue). There was immediate improvement in clarity, smoothness, and tightness in the bass. *All* components used with this isolation system have shown improvement and the Palette is no exception. Its chassis, when tapped, resonates like all other manufacturers' units do, and these resonances degrade the sound.

THE SOUND

Before we play with the controls, let's decide on the basic quality of the preamp—EQ out. The unit was not supplied with a phono section. Therefore all listening was done with CDs. For most of my listening I use a passive preamp designed so that the signal only passes through one impedance matching resistor. How does the sound of the Cello Audio Palette compare with this near straight wire unit? And how does it compare with a very good, but not state-of-the-art preamp like the Audio Research SP9?

I set up all three preamps and adjusted their output to match within .25 dB with a 1 kHz test tone. The first CD I listened to was *The Other Side of Jobim* by Ana Caram on Chesky JD73. The opening to track five, "Correnteza," has lots of little percussion and cello sound effects, and a very spacious feel to the soundstage. The sound on this CD is smooth and warm. It would take a really bad unit to screw it up, so I used this CD primarily to judge instrumental placement and stage size. With the SP9 I got a deep rectangular soundstage, the rear of which was flush to the corners of the room. No sounds appeared at the face of the speakers, the front most instruments appearing about a foot in back of the speakers. With the passive unit the sounds came from essentially the same place, but slightly more laid back, and total stage volume was the same. What the passive unit had over

the SP9 was that last little bit of sonic purity, an ability to deliver harmonics in a richer, more complete way. That came at the expense of a slight loss of dynamics which is the result of removing an amplification stage.

The Cello, EQ out, gave me essentially the same picture. The rear of the stage reached to the corners and the front of the stage moved a few inches closer to me. Dynamic advantage over the passive unit was preserved, of course, since this is an active stage of amplification. That's not a small thing for many listeners. The Cello made a lot of low level detail seem more real.

On Ariel Ramirez: *Missa Criolla* (Philips 420 955-2), the choral voices, guitar, and harpsichord contained lots of high frequency information and proved more revealing. The Palette (EQ out) was smoother in the high frequencies than the SP9, though the performance of each unit could be influenced by whether or not they were sitting on the sand bases. The SP9 (with base) was nearly equivalent to the Palette (without base). It caused the 9's slight silvery, grainy coloration to virtually disappear. The Palette had none of that to start with. The presentation with the Cello was lively. The unit produced lots of ambient cues about the size of the hall, and again I noticed the way it "freshened up" low level musical information, suggesting one aspect of live music.

The passive unit had that last little edge in tonal coherence, and instrumental placement was slightly more specific, while the Cello produced a slightly larger image.

"Nunc Dimitis" from *Cathedral Music* by Geoffrey Burgon (Hyperion CDA 66123): more choral voices, brightish balance. The spread at the rear of the soundstage was about a foot wider with the passive unit than with the Palette (EQ out); the rest of the soundstage parameters remained comparable. Incredibly, sibilance from the choral voices, exaggerated by the spacious acoustic environment, sounded the same. The soundstage from the SP9 was essentially equal to the Palette, the frequency balance about the same also.

On Frank Sinatra's "Blues In The Night" from *Only The Lonely* (Capitol CDP 7484712) Sinatra's voice came through just right—not too chesty, his voice free of glassiness on the crescendos. There was gobs of depth, and the shell of the soundstage ran from corner to corner in the room. There was lots of space between instruments and all information was well separated. Results with the passive unit were the same on this recording: a tad wider, a tad purer in tonality, and somewhat less dynamic. This remained consistently the same from recording to recording. The Palette gave more separation between instruments than did the SP9.

A word here about expectations. Is it realistic, given the current state of technology, to expect any active circuit to equal the performance, in certain areas, of the single resistor in the passive unit? Emphatically not! I don't expect any other high-end preamp to equal the performance either. But it's there for a yardstick, and this preamp comes very close. With dynamic material, a good preamp like this will sound more like the original performance with that dimension added. This is a top performing preamp, and with that prerequisite established, let's see what happens when the EQ is switched in with the controls set to 0.

EQ IN

There was a slight increase in gain in my sample, mostly due to a slight boost in the midbass. A -1 dB setting at 120 Hz put me on a level playing field. Soundstaging on all the above recordings remained the same as with the EQ

out! Tonality and coherence remained excellent with the exception of a very, very slight increase of a silvery coloration at the highest frequencies. The space between instruments seemed a little more filled compared to the EQ out position which was notable for having lots of space between players. That's about it! And that's a lot of circuitry to throw into the signal path. EQ out *is* very slightly better, as expected, but by the time you need to go into the EQ mode due to faulty program material, you are already in much more sonic trouble than these very minor differences.

What can be EQ'd successfully and what can't? What can't are 1) recordings with a bad acoustic environment such as the canned strings found on many pop and jazz vocal recordings of the fifties and sixties where the strings were actually recorded separately from the singer and lead instruments, usually in a different studio or separated by acoustic baffles. In such a situation, attempts to ameliorate the canned sound of the strings will adversely affect the frequency balance of the singer and the band. Recordings which are too dry or too echoey due to aberrant reverb times similarly can't be completely helped, although certain frequency related symptoms can be touched up. 2) Recordings which sound glutted, either due to overrecording several closely miked instruments, or those recordings which use so many microphones that the final mixdown sound results in confusion of the whole.

What *can* be successfully EQ'd are recordings in which the primary problems are ones of frequency balance. EQing vinyl has two limitations. Boosting the bass may boost rumble which may be hidden in the vinyl or the feedback loop of your turntable. Boosting treble will boost surface noise and tape hiss, so quiet surfaces are essential. Digital software provides optimum parameters for correction.

"Stardust" from Nat "King" Cole's album *Love Is The Thing* (Capitol CDP7 466482), one of the most famous ballad albums of all time, was a hard test case because it embodied the canned string problem. The strings are strident as well as sounding as if they were playing inside a can. I began by turning the 20 kHz control down to -3, which smoothed out the very top. The 5 kHz also needed a decrease, but turning down that control to -3 killed the string section entirely. I settled on -1.5 for that, and turned up the upper bass and the two midrange controls to +2, placing the treble range in better perspective to the rest of the sound. That's a trick to learn! If you can't satisfactorily tweak the exact band required, adjust the associated bands to place the offending problem further into the body of the whole. Switching back and forth between EQ and EQ out revealed a more satisfying overall sound in the EQ position without killing too much of the string section. Of course the acoustic couldn't change, but some of the frequency related results of the problem could be helped.

Another killer is *Clifford Brown With Strings* (EmArcy 814 642-2). As you might guess, the strings and some of the trumpet notes are excruciating. I settled on -7 at 20 kHz, -3 at 5 kHz, and the 2 kHz was left at 0. The recording also lacks warmth so I cranked up the bass, +2.5 at 500 Hz and +3 at 120 Hz. This time the net improvement was much greater because the fundamental recording environment was better.

You must remember that when you cut back on frequency, you are cutting back on the "quantity" of the instrument itself, so even the most judicious use of the controls eliminates some of the instrument. EQing is a compromise in which the subjective effect becomes more pleasing than the original. The difference between these first two recordings was that on the Nat Cole the level of the strings was appropriate, but the

sound was wrong. When you began to cut there, you lost information, you lost some instrument. On the Clifford Brown, the entire treble range was excessive. When you cut to improve quality, you could easily live with the reduced level.

Now some normal recordings, some touch-up jobs. "Early Autumn" from *The Johnny Mercer Songbook* (Verve 823247-2), Ella Fitzgerald got a 2-3 dB boost across the midrange and transformed a dry sounding CD into something much more rich—a very satisfying use of EQ. I became much more involved with the recording. I *enjoyed* it.

The two recordings mentioned at the top of the article were saved by this preamp. I was able to listen all the way through these recordings for the first time without getting a mid-bass thumping headache. *Ella And Louis* and *Ella And Louis Again* (Verve 825 373-2 and 825 374-2) took a hit of -5 dB at 120 Hz and -2 dB at 20 Hz and benefited tremendously. This is what I love. This preamp can take *real music*, music that people really want to listen to, and make it so much more thrilling. Check out Ella and Louis on "Moonlight In Vermont" or "They Can't Take That Away From Me."

The boxed set of Sibelius symphonies by Sir Colin Davis (Philips 416 600-2) became much richer and more enjoyable with a simple increase of +1.5 dB at 500 Hz and 2 kHz and a -2 dB cut at 20 kHz. I could go on and on like this, but one question remains. Can you accomplish the same thing with a traditional equalizer in the tape loop? No Way! I dusted off my old BSR and tried. Enough sizzle in the highs to fry an egg. It's just not the same, not workable. Dynamics were killed. Forget it.

The Cello Audio Palette is a top preamp which, in the EQ mode—and at very little sacrifice—gives the serious music lover a marvelous tool to significantly increase the enjoyment of their extensive collections. I even got a brow raised in approval from a confirmed tube lover. If one wants to upgrade their preamp at the same time they want to add EQ capability, this product makes eminent sense. Yet what of the audiophile who already has a top preamp and just wants to EQ once in a while? Well Cello? How about something for the tape loop?

The Cello Palette Preamplifer; price: $6500, $8500 with external phono unit; Cello Ltd., 315 Peck Street Bldg. 23, New Haven, CT 06513; 203 865-1237; Cello Music and Film Systems Manhattan showroom 212 472-5016, Los Angeles Showroom 310 273-2203.

Associated Equipment: Mirage M-1 and M-1si speakers; Ocos cable; Krell KSA 250 amp with Hovland AC power cord; Discovery Cable and Kimber Kable KCAG and KCTG interconnect; matching resistor passive preamp, ARC SP9 Mk 1 preamp; Monarchy D/A converter, Museatex D/A converter; Museatex C-lock CD transport with Music Metre digital coax cable. Little Rock and Big Foot isolation bases (Bright Star Audio) used on all electronic components.

COMMENTARY ON THE CELLO AUDIO PALETTE PREAMP

John Schleisner

The Cello Palette is a sophisticated equalizer/tone control designed for premium high-end home installations and professional recording studio applications. Its pedigree is apparent upon witnessing both the product's design heritage and price tag. I have been asked by the editor of *The Audiophile Voice* to evaluate this product from both

the standpoint of sound quality and technical attributes.

The Palette goes against several high-end audio axioms, but one in particular:. it is a tone control. Yes, tone control. This immediately conjures up images of the mid-fi graphic equalizer. This is not a mid-fi graphic equalizer—and at $6500 retail it better not be!

This product is a combination line level preamplifier and equalizer. The line level preamp. is standard in nature, offering five line level inputs, two tape loops and a selector that places the EQ in or out of the main output signal path. The tape outputs are always connected to the equalized output. The equalizer portion of the Palette consists of six knobs controlling six separate fixed center frequencies. The controls are centered at 20 Hz (22 dB), 120 Hz (12 dB), 500 Hz (6 dB), 2 kHz (6 dB), 5 kHz (12 dB), and 20 kHz (22 dB). I don't understand the requirement for so much range, but then I never tried to EQ an old 78 RPM record.

The audible performance of the unit as a line stage is commendable. It is not flawless, but certainly qualifies as a very high class performer. The overall sound quality of the line stage could be described as slightly dry but never edgy or aggressive in a way that would inspire anyone to turn it down or off.

The terrific news is that when the equalizer is switched into the main signal path the assessment of the line stage above still applies! With the EQ in the system the overall sound quality is not diminished. The fun starts when you start playing less than ideal program material (analog or digital). With judicious use of the six EQ knobs almost all but the most revolting program material can be rendered civilized. This is not a product for the audiophile with six CDs or records of audiophile quality who wants to show off his hardware. This is a instrument for the true hard core music lover who will listen to grimy, bacteria ravaged records, or (heaven forbid) bright, forward sounding compact discs.

On to the technical issues surrounding this machine. The obvious negative that jumps out at the casual observer is that all the audio stages are IC based. This however is 1992. The original operational amplifiers employed in audio use were horrible, and the second generation was not much better. This second generation stuff is still employed in mid-fi equipment and, unfortunately, in many lower priced CD players (sometimes in expensive players too). Today, improvements in IC technology (specifically, dielectric isolation techniques) have provided IC designers with PNP transistors that are equivalent the their NPN counterparts.

The capacity to utilize true PNP transistors with the NPN devices enables the IC designer to create symmetrical, mirror image amplifier stages that cancel distortion without excessive feedback around the amplifier. Symmetrical amplifier design is a feature that previously only designers of discrete amplifiers could take advantage of, a true handicap when designing a quality audio amplifier around an IC. Certainly this is not the only hurdle to overcome, but it is a very significant one, and makes the other problems very negotiable.

Designer Tony Colangelo utilizes the Burr Brown OPA627 and buffer IC OP633 to create the gain and buffer blocks required to execute the design in style. Personally, I would have liked to see the gain blocks for the straight line preamplifier stage done with discrete components and the equalizer section executed with the premium IC's. The discrete approach would have added significant costs to an already pricey unit. The argument could be made that the Palette is primarily an equalizer, and this refinement would add cost yet

provide little return in audible performance.

The component selection is generally of very high quality. However, to keep the cost of the unit "reasonable" ($6500) some compromises had to be made. It must be kept in mind that Cello also offers the Audio Palette; this instrument retails for a cool $15,000 standard or $17,000 with multiple switching input option.

When I first opened the cover of the control unit (the power supply is in a separate box) I was disappointed with the apparent quality of the potentiometers. The manufacture name stamped to these rather small unassuming controls was Dale. Dale is a well known manufacture of high quality metal film resistors; I could not, however, recall seeing Dale potentiometers elsewhere in high-end audio. Dale, it turns out, has been bought by the Vishay group, along with other prominent resistor manufactures. The controls are manufactured in France and sold in the states under the name Dale. Not a bad idea—the manufacturing/engineering community in the U.S. is familiar with Dale. During my conversation with Tom Colangelo he voluntarily pointed out some of the compromises made in the unit. He explained, to my satisfaction, why these pots were selected.

Frankly, the volume control doesn't track from channel to channel as well as I would expect on a preamp in this lofty price range. All controls on the original Audio Palette are stepped attenuators which eliminates all tracking and backlash problems. On the up side, the controls were selected for reliability and good sound quality. I never found the controls to be an annoyance or distraction at any time. *[Mark Levinson reports, at press time, that a lower gain setting used in recent, units eliminates the imprecision inherent in using volume pots at their lowest setting. The pots must now be used within their proper operating range.—Ed].*

There are several technical features in the unit that bear honorable mention. The protection circuitry is extensive. The output is muted via a relay shorting the output to ground upon turn on, and the relay drops out quickly upon turn off or power line brown out to prevent any hazardous signals from reaching the power amplifier and damaging the associated loudspeakers. There is also an internal protection scheme to prevent serious damage to the unit should the power supply fail internally. This is a nice idea. During the warranty period, which is lifetime for this unit, it protects Cello from major rework due to power supply failure damaging the close to twenty expensive ICs.

The unit runs off one master power supply providing 15 volts to the line and EQ stages. This supply is based on Linear Technology ICs in an innovative symmetrical tracking scheme. Each of the many premium amplifier and buffer ICs are triple bypassed with audiophile grade capacitors. This whole arrangement is connected via an extremely robust buss bar for each voltage rail—an excellent engineering practice.

The actual topology of the tone control section is based on the Baxendall type of tone control. Six of these are configured in parallel. One circuit for each turn over frequency. This topology yields an equalizer with very low noise and distortion. To put this in a historical perspective, the bass and treble controls on the Fisher 500C receiver produced in the early 60s featured this type of tone control! It worked then, it works now.

From a measurement standpoint the unit proved to be an excellent performer. The IM distortion ran below the residual of my analyzer, something below .01%, plenty low enough. The separation from channel to channel is not fantastic, about -45 dB. at 20 kHz. However, the crosstalk present is linear and

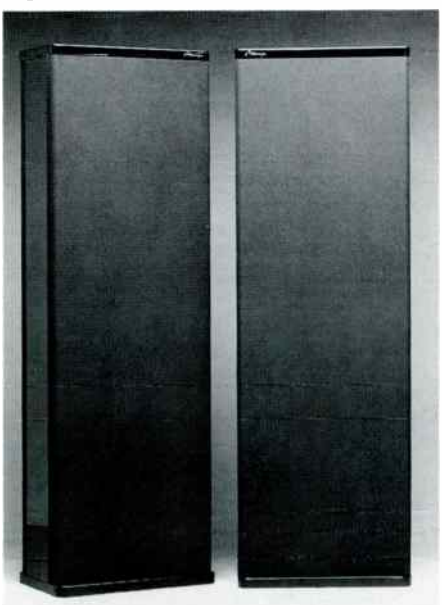
unobtrusive. Noise was negligible and never proved to be a factor.

The Palette Preamplifier is a very good performer as a line stage preamplifier; as an equalizer it is a terrific tool. The ultra conservative audiophile might find the line stage less than perfect on the dozen or so perfect sources in his or hers possession. For the purist application I would recommend a high grade passive attenuator, if the other conditions in the system permit it (i.e., short cables, a high input impedance at the power amplifier, and that the signal source is capable of properly driving the passive preamp). With the extremely wide variables in monitor systsems in recording studios, the ability to tailor frequency response aberrations without sonically degrading the audio signal is no small achievement, and probably a very necessary element in realizing the full potential of your software and equipment.

The Mirage *M-1si* Loudspeaker

Russell Novak

The late Friday afternoon arrival of the Mirage M-1si speakers made me exactly one day late departing for Baltimore and the festivities surrounding the 1992 Preakness Stakes (Pine-Bluff; yes, I had him). No speaker could have made a more inauspicious introduction. You can't unpack very large cartons and lug speakers around and think about thoroughbreds at the same time.



Fortunately for the M-1si's, I was predisposed to like them since I own and enjoy the original M-1's. So I set them up and let them break in by loudly playing music all weekend while I was gone. I know the neighbors enjoyed them because I found all kinds of notes stuck to my door when I returned. Undeterred, I kept the music going for another week until I racked up well over 100 hours. Now, when you have to break in speakers with a 250 watt class-A amp like the Krell KSA 250, this becomes an expensive proposition. I remember my electric bill going up by $60. I hope the boys at Mirage appreciate my efforts (I'll take two box seats at Pimlico on the third Saturday in May).

What does the "si" stand for in the Mirage M-1si? Something that designer Ian Paisley could barely remember and I forgot to write down, just some manu-

facturer's designation. But for me the "si" stands for *Sizable Improvement*.

PHYSICAL DESCRIPTION

Physically, the M-1si's are exactly .25" wider than the original M-1s, and in all other respects they are identical. Standing 60" tall by 19.25" wide by 9.625" deep, with their black lacquer top and base plate and their black grill cloth, they resemble the monolith from *2001: A Space Odyssey*. Despite their size, they do not visually dominate the room. The ultra simple lines and black color allow them to disappear both visually and psychologically, and this surely aids in the presentation of the music. If you keep the speaker end of the room dark, as I do, it further enhances the illusion of a true continuous stage.

Internally, the speakers have been completely replaced, retuned, and redressed. There are all new drivers, six of them: pairs of front and rear facing tweeters, midranges, and woofers—this being a bi-polar design. The soft dome

M-1SI CROSSOVER DEVELOPMENT

The design criteria used for the development of the M-1si crossover network were the following:

1. A holistic design approach to the loudspeaker as a system.
2. All pass system response.
3. Minimal vertical lobing.
4. The acoustic output of all drivers must add at all frequencies.

The choice of an all-pass system response required the development of a set of complex equations to describe the crossover network. We then used the equations to develop a computer programme that would specify optimum component values. Without such a programme, the design equations required ten hours to arrive at a single solution. With the programme, we were able to investigate hundreds of sets of crossover points.

The crossover topology is:
LF 12 dB/octave low pass @ 400 Hz
MF 12 dB/octave high pass @ 400 Hz
12 dB/octave low pass @ 2000 Hz
HF 12 dB/octave high pass @ 2000 Hz

All inter-driver crossover points are at the -6 dB points of their electro-acoustic response. Each driver is equalized using appropriate filters that are conjugate matched to preserve a resistive load to the main crossover elements.

Needless to say, all of the technospeak above was only a starting point. Countless hours were spent in blind listening tests before the final voicing of the M-1si was finalized.

Ian Paisley,
Vice President, Engineering
Audio Products Int. (Mirage)

tweeters in the M-1 have been changed to titanium dome with a cloth surround. This modification of the traditional type of metal dome allows the resonant frequency (700 Hz) to be way below the crossover point (2 kHz) and eliminates the resonant point of the driver from interfering with the signal. The coil is wound directly onto the dome, increasing speed and accuracy, and the core is hollowed out and filled with damping material.

The new midrange and bass drivers have been improved by an injection molding process that improves consistency and performance. Carbon fiber is laced within the polypropylene cone material for added stiffness. The woofer drivers are now operated full range, creating more energy (and flatter response) in the 100-300 Hz range. In the M-1 there was no output in that range from the rear woofer. This created a depression that, in larger rooms, could make the speaker seem lean. The new woofer/cabinet/crossover configuration is -3 dB at 25 Hz (tuned to a Q of .3). Although Mirage originally conceived the M-1si to be a sealed box system, they got better bass control by remaining with a vented box configuration.

Wiring is improved to a stranded OFC copper configuration, and Solen polypropylene capacitors are now on the crossover board in the mid and high frequency signal path. The gold five-way binding posts (two sets per cabinet for bi-wiring or bi-amping) now have metal nuts instead of the plastic ones, which were easily stripped when subjected to the torque of a nut driver. One caution: Turn off your amp if you are working with a nut driver at these unshielded terminals. One slip of the driver could cause a short. After you determine the final placement of the speaker in the room, you will find threaded sockets in the base in which to screw the supplied spikes. Small plastic stick-on feet are also supplied for bare floor placement.

The cabinet is nicely non resonant when rapped, and I could detect no obvious contributions to the sound.

DESIGN GOALS

After introducing the original M-1 to highly favorable reviews, Mirage began working its way down the line, developing the M-3, M-5, etc., along with a consumer line of speakers, all bipolar. As they went along, Ian Paisley explains, design and materials improved until they came to the point at which the less expensive models were outperforming the ones above them. Time to start back at the top, where the M-1 design was now four years old.

His stated goals were to: 1) improve the speed and smoothness at the top end where the old soft dome tweeter had a "forgiving" character; 2) increase definition in the lower midrange where, Paisley felt, the M-1s had a "ball of cotton" quality; 3) eliminate the slight mid-bass depression around 150-200 Hz; and 4) tighten the bass for better definition across the board, and extend the bottom.

You can see from the above description of the changes in this model that Paisley has addressed all these points directly in his re-design. I can tell you that in practice, they work wonderfully. Unfortunately, it will not be practical for M-1 owners to upgrade their speakers—too many internal changes. But don't worry, your M-1s (and mine) still sound good.

ROOM PLACEMENT AND BIPOLAR DESIGN

Placement of these speakers in the room is surprisingly easy as a result of their bi-polar radiation pattern. Defining what a bipole is and how it differs from a dipole is not as easy as placing them, as I found out after some wrangling

among our editors, reading old reviews, and talking with the designer. It's certainly not something you can put in one paragraph. Let me have a go at it in seven paragraphs.

In a classic dipole design, such as an electrostatic, there is one membrane and two paths for sound output. When a positive going pulse leaves the front of the speaker, a negative one appears at the back; after all, the diaphragm can't go in two directions at once. Now let's look at the frequency spectrum and divide it into two areas: low bass and everything else. Most of the world knows about the cancellation problems inherent in a dipole design when it tries to produce low bass. The forward pulse from the front of the speaker will actually wrap around and be canceled by the out-of-phase pulse at the rear due to the long pulse length and the unequal air pressure created by this momentary condition. The frequency at which the speaker will "cancel" is determined by its distance to the rear wall.

The radiation pattern of a dipole is a figure "8"; i.e., sound radiates to the front and rear and there is very little to the sides. This is true because the wide screens used to launch mid to upper range frequencies will direct, or beam them in a narrow band at the listener. Dispersion is limited. Now hold these ideas for a little while.

In a bipolar design, there are two sets of drivers, front and rear facing, and they are in phase with each other; i.e., they can both move out or in at the same time. In the low frequencies this avoids the problem of wrap around cancellations. (There is another, minor cancellation resulting from the different arrival time of the two drivers, but this has been eliminated in listening environments by tweaking the crossover and correcting the vertical spacing of the drivers in the cabinet.)

Also, the small midrange and tweeter drivers are much closer to being a "point source" and consequently have wide dispersion. The radiation pattern from the Mirage cabinet is nearly a circle, only slightly compressed at the sides. It is immediately obvious that this speaker will react with side walls much more than a dipole.

In experimentation at Mirage, a bipolar speaker was set up with a switch that would change the phase of the rear facing drivers. Whether in or out of phase, the feeling of depth remained equal and there was no change in spectral content. However, when the rear facing drivers were in phase with the front ones, the speakers gave much more lateral information, *more width in the soundstage.*

There's more. The M-1si mimics a pulsating column in which a major design goal is to present a radiation pattern in which *all reflections have roughly the same spectral content as that of the direct sound.* Reflections off walls are therefore balanced spectrally—a very desirable characteristic. The ear/brain combination gets its critical information from the direct sound from the speaker. Reflected information delayed 6-10 milliseconds or more is added to the direct sound and determines spectral averages and quantities and is used for ambiance cues. Though the Mirage is a "box" speaker, it retains the airiness and transparent bass of dipole designs due to these unique design characteristics.

Because the direct and reflected sound both have the same spectral content, and because cancellations are avoided, the speakers can be positioned for best soundstaging without running into as much trouble as with dipoles. Add a metal dome tweeter to give you the speed of an electrostatic and you're way ahead of the game.

Another advantage of the Mirage bipolar design is that dynamic drivers are a lot more dynamic than electrostatics—

in both the micro and macro sense. They breath more life into the music than electrostatics can and no Magneplanar MGIIIa owner ever got the bass you get with these, or the satisfaction you can get at low listening levels. Fact is, this is a very elegant combination (not a compromise) of many desirable features.

The only thing to be careful of is the composition of the wall in back of the speakers. Different frequencies will be absorbed or reflected depending on the composition of the wall. Something too soft, like thick curtains, will absorb the highs. Something too hard, like glass or brick, will add a whitish or peaked sound to the highs. When I heard the original M-1's at Lyric Hi-fi in Manhattan, I didn't like them. They were standing in front of a naked brick wall. In other surroundings they did much better. The guys at Innovative Audio (Brooklyn) got much better sound in front of a plaster wall. They also had two sheets of Manville 475 fiberglass, framed and covered with attractive fabric, which they could place against the wall in back of the speaker. It tweaked the sound to the nth degree (the original M-1's had a very slight whitish quality to the treble anyway).

Back to placement. In a 12' x 19' room with 8.3' ceilings, I finalized placement with the speakers 72" in front of the short wall and 38" (measured from the drivers) in from the side walls. This gave me about a 6' spread between the speaker drivers and the listening chair was placed about 8' back. Moving the speakers forward and back, out and in during my initial experimentation period, only altered the perspective of the soundstage. Spectral content remained reasonably similar as long as extremes were avoided. This experimentation confirmed my impression that this speaker is very user friendly to place.

Now, my room size is not the optimum for this speaker. Paisley recommended a 15' x 25' room as the minimum. Popular recordings tended to overload the room with the midbass. I tamed this by the use of Kimber Kable KCTG silver interconnect, which has astounding control in that area. The Krell KSA 250 is also excellent in this regard, and I adjusted my seating to a spot in the room that has a midbass null, yet doesn't spoil the presentation. Final measurements across the bass region put me within a few dB of the 1000 Hz test tone level. In this one respect only, the original M-1, with its depression in the midbass region, would be a better match for a small room.

I could also have used another two feet of room width to allow the speaker to develop as good an image to the outside of the cabinets as it is capable of. Hearing the speakers in a larger environment confirmed that this is easily within the M-1si's capabilities. Further experimentation revealed that a sheet of sound absorbing foam placed between the speaker and the wall at tweeter and midrange level could "fool" the speaker into thinking it was in a larger room by killing the early reflections off the side walls. Much more sound then appeared at the front outside the speaker, and made clear to me that my next project should be to construct such a baffle in a visually unobtrusive way. But remember, these problems are the result of having a small room, not of the speaker itself.

THE SOUND

Well, forget it. This is a great speaker. The overall impression is one of smooth, rich, sweet detail, coming to you from a broad and deep soundstage. The speakers completely disappear and you are drawn into a sound landscape. Given halfway decent software, you never hear an unmusical note.

The original Mirage M-1 was a "dark" speaker, not in the sense that it had rolled off highs, but in its general pres-

entation. Sounds seemed to emerge from a distant black space in a natural but "mysterious" way. The M-1si threw me off at first hearing. The front of the soundstage had moved forward to a spot about one foot in back of the front grill cloth. It was like moving a few rows closer in the concert hall—undoubtedly the result of having a faster tweeter and midrange. Yet the rear of the stage remained as deep as the former speaker placed it.

You can hear more of the rear of the stage with the M-1si, more detail overall. In other reviews in this issue I labored to describe differences between equipment and wires, but I have to thank the M-1si for the ability to hear them definitively. This is not a speaker that presents detail starkly, but delivers it naturally, within the context of the music. The presentation is still on the "dark" side of neutral, but is less dark than the M-1, and well within the neutral range. It is an especially romantic quality. Classical music has lots of depth and perspective; multi-miked pop music is much less "in your face," much more pleasingly presented.

The speaker is very transparent. As stated above, differences in ancillary equipment and software are more easily heard with the M-1si than with its predecessor or most other speakers. Instruments are well separated and specifically placed within the soundstage. Differences in recording venues are also easily heard. All these qualities are interrelated of course. What I can't figure out is how they are consistently presented in such a musical way. Other speakers can give you detail, or depth and width, but don't always sound musical. In fact, it usually takes a specific combination of hardware and software to achieve a musical state. The M-1si does this with a much broader range of material. It really takes some poor hardware or software to stop listening to the music and start thinking about the equipment. In short, once you are set up with complementary components, you can just mix up your mint juleps and enjoy the music.

The basic soundstage shell that appears in the room is one as wide as the speakers and as deep as the rear wall. That's the minimum. With increased quality in software and hardware the shell quickly expands at the front and rear, flush into the sides and rear corners of the room. A perfect rectangle! Depth increases to beyond the rear wall. How good can it get? Well, on *Deep River* (RCA LSC 2247), the Robert Shaw Chorale forms perfect rows of voices beginning at a point about 6' in back of the speakers, going back from there and running flush into the corners of the room. Quite impressive.

Dynamics. This speaker can kick ass sufficient for Corey Greenberg, and has more balls than Sam Tellig would ever want (i.e., they play very loud without distortion or strain), but that's not the good part. Inter-instrumental dynamics—the ebb and flow of sound, the life breathed into instruments *at normal to low listening levels*—are excellent. That's what adds a lifelike quality to the music.

In the frequency domain this speaker gives the listener a seamless presentation from top to bottom. Everything seems cut from the same cloth. There are no disjunctures between instruments as the result of having different drivers handle particular ranges. Should we go up and down the octaves? I guess so. I don't think digital is getting the treble right yet, so I tended to stick with vinyl in judging the treble range. I used the phono section only of an Acoustic Research SP-9 or the Melos 333 phono section, and ran that directly into a simple "passive preamp" consisting only of a matching resistor, then into the Krell KSA 250.

This configuration gave me one of the most perfect incarnations of the classic EMI string sound I have heard. There

was an absence of the slight whitish quality associated with the M-1, and no trace at all of a metallic coloration from the metal dome tweeter. I hear the treble as extended, clean, and sweet. Upper harmonics of the triangle are rendered beautifully, as are the strings on Frank Bridge *The Sea* (EMI ASD 3190). Closely miked cymbals on jazz recordings came through without splash and with proper harmonic structure. With decent software, there is a liquidity in the treble most people would strive for. The presentation never seems dry except when the software is recorded that way.

In the midrange and lower treble, I find the mating of the two drivers especially good. Piano fundamentals and their overtones are wonderfully immediate and handled with grace. Claudio Arrau's recordings of Debussy's piano music (Philips 6768 357), Keith Jarrett's *Köln Concert* (ECM 2-1064) and other such recordings were listened to at length with no listener fatigue from glaring upper midrange piano notes. Woodwinds, vibraphone, and the lower strings were presented with body and no obvious transition between bass, midrange, and treble drivers. The telltale body resonances of the instrument in question—the clues that tell you what material it is made of—are easily heard.

Finally, the bass. It goes deep, is full bodied, tight and can knock you on your ass if you crank up the pop music. There is no problem distinguishing acoustic bass notes, no boominess, no one note bass, and, thanks to the bipolar design, *it has no box coloration*. That's crucial. Virtually all box speakers sound like a box to a greater or lesser degree depending on their construction. I lived with a box speaker for years and got sick of it. When the time came to upgrade, I wanted the dynamics and life of a dynamic driver design, but I couldn't take another box. The M-1 was the perfect solution and the M-1si continues in the tradition.

ELECTRONICS

A high wattage, high current amp like the KSA 250 or (less expensively) the Crown Macro Reference really takes command of this speaker. Those yearning for the "tube sound" should use a good transparent tube preamp to set the basic tonal character. The Melos 333 line and phono stages worked beautifully during a one week period they resided with me. That unit seems to capture the sweetness and holographic character of tubes without bringing with it the opaqueness and caramel coloring of other tube units. I also switched back to my matching resistor passive preamp about 50% of the time, never settling on which sound I liked more.

If a tube amp you must have, I found the Sonic Frontiers SFM 160 to present an even more laid back, clean and gentle sonic picture at the expense of some dynamics. My co-editor's Jadis Defy 7 sounded great with my original M-1s during a one night audition (but remember the mid-bass depression in the M-1). Tubes may lack bass control, so listen to whatever you contemplate buying. Generally, in matching components or accessories for these speakers, I would stay away from "soft" or "dark" sounding ones.

CONCLUSIONS

Every time I sought to identify a coloration or deficiency in the speaker, I changed the music source to check my impressions. Invariably, the characteristic I thought was coming from the speaker was coming from the software. I guess that's what a good speaker will do for you—get you aggravated at the recording industry. Yet, unless you insist on playing Bix Beiderbecke and King Oliver at high volumes, the M-1si does nothing unmusical.

How can I convey the pleasure of having this speaker without gushing? How can I emphasize the importance of this design in the marketplace of high-end audio? Let me try to convey the feeling and the idea through simplicity. 1) It sounds like music; it shows you differences without acting obstreperous. 2) It gives you the open clean sound of dipoles without their disadvantages: placement difficulties, difficult load or power problems for amplifiers, and undynamic sound (ribbons excepted). 3) It is a true full range speaker for a reasonable price and size. 4) It is transparent and images very well. 5) It has a polite demeanor. Aaron Copland managed to convey the feeling and sweep of our country with very simple, self-effacing but meaningful melodic lines. The Mirage means what it says without calling attention to itself, yet conveys the feelings and ideas inherent in the music.

Mirage M-1si loudspeakers. Ian Paisley, designer. Price: $5,500/pair in bi-wire/bi-amp configuration. Audio Products International, 3641 McNicoll Ave., Scarborough, Ontario, Canada M1X 1G5. Phone: 416 321-1800; FAX: 416 321-1500.

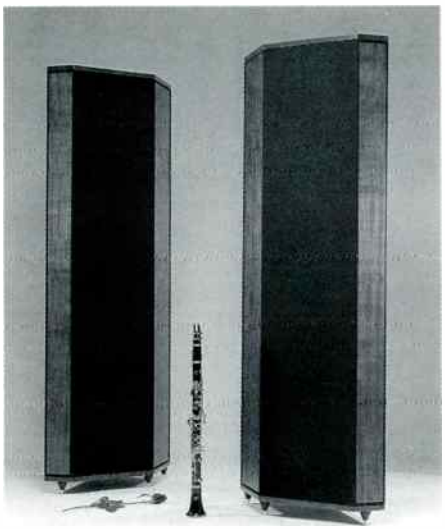
Associated components: Ocos Speaker cable, parallel wired; Krell KSA 250 power amp with Hovland AC power cord; Discovery Cable interconnect; Kimber Kable KCAG & KCTG interconnect; Melos 333 line and phono stage preamp; ARC SP-9 MK1 preamp; matching resistor, passive preamp; Monarchy International D/A converter; Melior (Museatex) D/A converter and C-lock transport; Music Metre digital coax cable; VPI HW-19 MkII turntable; Well Tempered Arm; Sumiko Blue Point and Signet AT-OC9 cartridges; Bright Star Audio Little Rock and Big Foot isolation system.

Esoteric Speaker Products Concert Grand Loudspeakers

Bill Wells

I first heard a pre-production prototype of these speakers at the 1992 Winter CES in Las Vegas. To say that they acquitted themselves rather well is an understatement; their sound was truly noteworthy. The physical proportions were significant, the design attractive, and the sound musically engaging, so I was curious about their origin. At the show, and in subsequent phone conversations, principal designer/developer Sean McCaughan provided the background. Of particular interest, I found that McCaughan had previously worked at Harold Beveridge's speaker company in Southern California. In that capacity, he was an active participant in the development of Beveridge's Model 5 electrostatic hybrid loudspeaker system.

McCaughan later formed his own company, Esoteric Speaker Products, which presently is located in Aromas, CA



(near beautiful Monterey, one of my favorite vacation retreats). The initial design of the Concert Grand loudspeaker system started during the late 1980s. The designer spent several years experimenting with many different drivers, components, coils, etc. His primary goal? Nothing less than the Holy Grail of audio: the reproduction of recorded music (particularly the acoustic type) in the home environment with a quality approximating the real thing—live music.

Further, McCaughan stated that he was striving for a sound possessed of the transparency and openness of electrostatics—remember, he came from Beveridge—but with the power and dynamics more often found in conventional box loudspeakers. His challenge was to accomplish both, in a single box, without compromising one or the other. Based upon my listening experiences to date, I would say that he has largely achieved his goal.

Looking over my listening notes from the January CES, I find comments such as: impressively natural sounding; relaxed presentation; noticeably uncolored; transparent and open with very good ambiance retrieval. Very promising. Further refinements were made over the next several months, and McCaughan and his business partner, Mike Roberts, came to the June CES with a consumer-ready speaker system.

Quite large at 62 inches tall and 225 lbs., the speakers nevertheless manage to present an attractive profile to the listener. The cabinet is a uniquely shaped 5 sided affair, with the grille cloth side angled inward. The shape reduces internal standing waves, and the addition of internal braces—along with separate sub-enclosures to isolate the upper frequency drivers and the crossover from the low frequency drivers—helps control any remaining cabinet resonances. ESP supplies Simply Physics tone-cones to stabilize and mechanically ground the speakers. Standard wood veneers include light or dark oak, mahogany, maple, walnut and black ash.

The driver compliment is a little unusual for a 3 way system: two 8 inch Kevlar woofers, and 2 mineral-filled midrange drivers in a D'Appollito arrangement with a 1 inch metal dome tweeter in between. A second tweeter is positioned to fire to the outside, adding openness and air to the soundstage. To prevent any image smear caused by side wall reflections, this side tweeter is wired out of phase and reduced in level by 9 dB. Crossover frequencies are 250 Hz and 2500 kHz, and nominal impedance is 4 ohms. As befits an ambitiously designed high-end product such as this, special engineering touches abound: two sets of Cardas binding posts for bi-wiring or bi-amping; M.I.T. film and foil capacitors; special wire wound resistors; heavy duty, oxygen free air-core inductors; and high content silver solder.

Well, so much for background information; you probably want to know how they sound. I can unhesitatingly say . . . great! One of the first things I noticed after installing them in my reference sys-

tem was their explosive dynamic capability. These speakers possess an ability to present music with significant palpability, impact and finesse all at the same time. They do this with a quickness very much like real music, presenting sounds without overhang, yet not so razor-sharp (you know, edgy) as to detract. These dynamics are accompanied by an overall sense of openness and relaxation that allows the speakers to sound comfortable at a wide-range of listening levels. One thing is for sure: These speakers definitely are not wimps! They have real power (and control) that can be quite exhilarating.

The next thing I noticed was the overall fullness and coherency of their sound. The Concert Grands present a sonic picture that is seamless from top-to-bottom. The tonal balance is quite neutral, with no particular frequency region standing out. There is a very noticeable naturalness to their sound. This open, full, coherent sound really contributes to the speaker's ability to disappear (in spite of their large size). I also find that their performance in the areas of soundstaging and image focus to be outstanding.

When I first received these speakers they replaced my beloved ProAc Respons 3's. The ProAcs are real soundstaging and imaging champs, and I was concerned about retaining that level of superlative performance. Although the Concert Grands did not exactly disappoint me in that regard, the stage and images upon it were larger and seemingly not as focused as with the ProAcs—good, but not up to the high standard established by the ProAcs.

Because I was new to these speakers and had not really taken a great deal of time to get things optimized, my atti-

tude was . . . *not to worry*. Sure enough, one Saturday afternoon shortly after their arrival, a good friend (and audiophile-type) came by to hear these gems. He, too, was immediately impressed with their overall performance. But like me he also noted the slight lack of image focus and specificity. Thinking back to the time, effort and patience I employed in setting up the ProAcs, my friend and I decided to do some experimenting with speaker placement. Considering that these babies weigh almost 200 pounds each, stand over 5 feet tall and sit on spikes, friends are absolutely welcome when it comes time to move them, at least until you get the knack for doing it solo—which I have now mastered. *Anyway, thanks for the extra muscle, Morris!*

The experimenting proved to be quite worthwhile. The imaging I am now able to achieve with the Concert Grands is captivating. For the record, I usually sit anywhere from 12 to 14 feet back from the front of my speakers, with the speakers approximately 8 feet apart. McCaughan recommends a "best imaging" position of 1.2 times the distance between the speakers, which would call for a listening position in my room of 10 feet back. My old listening position was simply too far away.

Now here comes the interesting part. With most speakers, you usually wind up toeing them inward to improve imaging and lock-in the focus. Not so with the Concert Grands. In fact, due to their unique design, whereby the front panel containing the drivers is already angled-in approximately 45 degrees, I had to actually do just the opposite, angling the speakers slightly *outward*. Effectively, this moved the sweet-spot back and almost instantly caused the focus to lock-in. Images were no longer big and vague, but were now properly proportioned and correctly placed. With continual fussing around, I have been able to tighten things up even more. Certainly this sort of thing is time consuming but well worth it.

One other very noticeable between the Concert Grands and the Pro-Acs: Whereas the ProAc Respons 3s have reasonably good bass response within their limit (no deep bass to speak of), the bass produced by the Concert Grands is powerful, deep, full, and impactful. The ProAcs, with their dual 6½ inch woofer/midrange drivers, do a superb job in terms of quickness, speed and detail in the bass. However, in the lowest registers, they just cannot pump as much air, particularly in large rooms. The Concert Grands utilize dual 8 inch woofers to cover the full bass range. Additionally, these drivers are housed in a much larger cabinet than the ProAcs.

The deep bass of the Concert Grands is accompanied by very good detail and articulation. Unfortunately, as pleased as I am with their performance in this area, I have become painfully aware of certain limitations of my much cherished reference amplifiers—the Audio Research Classic 120s (see review this issue). Although the Concert Grands are very, very efficient (how about 96 dB, folks!), and are a relatively benign load (4 ohms), my amps just do not have the kind of power necessary to drive the low-end of these speakers the way they are truly capable of. With the 120s, I get good, but not great bass. Always have, always will. With the ProAcs having their own limitations in the deep bass, the pairing of the 120s and Respons 3s was totally synergistic and very magical. The 120s are, for the most part, superb with the Concert Grands, but in those critical lower registers I knew the Concert Grands were capable of more (much more).

According to the manufacturer, the Concert Grands have a bass resonance at around 31 Hz with the response extending somewhat below that point (usable output somewhere into the mid-to-upper 20 Hz range). In my search for more

bass power and control, I initially tried a solid state amp of similar power rating as the Classic 120s (110 watts per channel)—the Audio Research D-240 Mk II, which is rated at 120 watts per channel. With this amp on the Concert Grands, the bass improved noticeably. However, while the ARC D-240 is a very nice unit, it just is not in the same league as the 120s through the rest of the range. So my search took me onward and upward.

Fortunately, I have recently been able to secure an Audio Research D-400 amplifier. This amp is also solid-state; it is rated, however, at 200 watts per channel and is much more powerful than the 240. Additionally, the overall sonics are improved over the 240. Based on this amp's very positive performance on the big Thiel CS5s and the Sonus Faber Extremas at recent CES shows—both speaker systems have complex loads and are not at all easy to drive—I was quite eager to hear how it would perform on the Concert Grands. After sufficient time to burn-in this new amp (approximately three frustratingly long day . . . and nights), I finally got my answer: The ARC D-400 and ESP Concert Grands have locked together and transformed the sound!

To my ears, the D-400 gives no hint of being solid-state. Interestingly, so far I do not miss my beloved tube amps as I seriously thought I would before. (I should add that ARC has also loaned me one of their new BL1 Phase-Inverter units, along with a pair of balanced cables. In doing so, I have been able to run the D-400 in balanced configuration. Trying the amp both ways, I definitely prefer it balanced; it's a substantial improvement. (Personally, I would suggest anyone using this amp to pursue the option of running it, as ARC intends, in balanced configuration.)

With this significant increase in power and control, the Concert Grands have reached a new level of performance in my system. Everything I liked about them before has now been improved upon. They are possessed of significant capabilities and render an accurate portrayal of the musical experience in the home listening environment. From what I can tell so far, perhaps the company's name, Esoteric Speaker Products (ESP) really stands for Extra Special Performance!

Based on my very recent experiments and findings, and due to publication deadlines, my friendly editors have agreed to accept this abbreviated (and definitely summarized) review just so we can get the word out on these great sounding speakers. In the very near future, I will be doing a fair amount of experimenting with room treatment (thanks to the folks at Acoustic Sciences Corp.) and component substitution, including the introduction of a new turntable system into my system. All of this warrants additional coverage of these speakers in a future issue (likely No. 4). Actually, I look forward to this opportunity and challenge with extreme pleasure. (You know, it's dirty work but somebody's got to do it!).

Concert Grand loudspeakers by Esoteric Speaker Products. Manufacturer loan, serial # 00025/00026. $8900 per pair. Esoteric Speaker Products, 2895 Rancho Rea Road, Aromas, CA 95044. (408) 726-3362.

Associated equipment: Convergent Audio Technologies SL1 Signature preamp; Oracle Turntable/SME V tonearm/Benz Micro MC3 moving coil; California Audio Labs Tercet Mk IV CD player; ProAc Respons 3 loudspeakers; Audio Research Classic 120, D-240 Mk II and D-400 amps; NBS interconnects/speaker and digital cables plus AC power cords; Purist Audio Cable interconnects & digital cable; API Power Wedges; VPI Bricks; Goldmund Cones.

An Entry Level Speaker: *The Dana 2f*

Joel Shumer

For the past several months Dana Audio has placed alternating full page ads for their 2f speakers in *Stereophile*. In one ad, front and rear views of a pair of speakers are featured in a color photograph. The other ad is black and white, and more informational. It proclaims: "Dana Audio's $1000 speaker for $395 per pair."

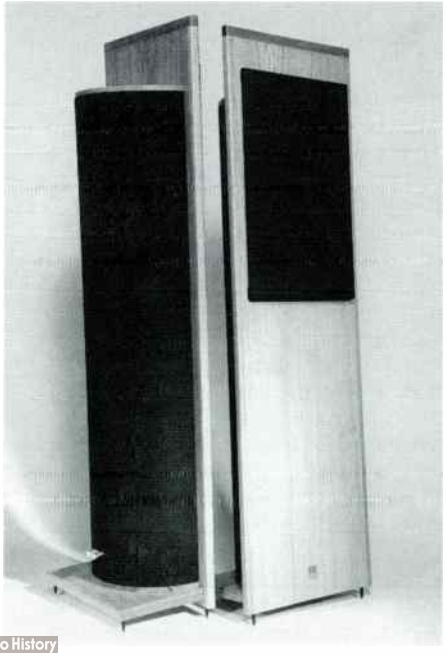
Both ads are effective. The speakers look gorgeous in the color photograph, and the factory specs are equally impressive: 40 to 20,000 Hz ± 3 dB, nominal 8 ohm impedance, 89 dB efficiency, 100 watts continuous power handling! Implicit is the mouth watering promise of good frequency extension, smooth response, an easy amplifier load, lots of volume—and all at a bargain price.

Eagerly I opened the large packing box and there, nestled head to toe, were the two securely packed Dana 2f's. In the flesh the speakers do not appear quite as stunning as they do in the color ad, but they are indeed handsome. Close examination suggests faultless build and finishing. Regardless of price, they appear to be a product of high quality.

The physical design is quite unique. Two drivers are fastened to a front baffle measuring 43" x 13" x .75", which is covered in oak veneer. A 1" SEAS aluminum dome driver is mounted just above an 8" Versa-Tronics poly-cone woofer. The drivers are covered and framed by black grill cloth which can be easily removed. A unique half cylinder, eleven inches in diameter, is attached to the back of the front baffle, enclosing the drivers. The surface of the semi-cylinder is covered in black cloth matching the speakerer grill material.

The base is a 12" x 7" x .75" piece of solid oak securely attached to the front baffle, allowing the speaker to tilt backwards at a slight angle. Two large gold plated five-way binding posts protrude from the rear of the enclosure about three inches above the floor. There are no spikes or feet. The 2f's sit directly on the floor supported by the bottom edge of the front baffle and the rear edge of the base plate.

ASSOCIATED COMPONENTS AND SET UP



Prospective purchasers of $400 speakers, probably new entrants to the high end market, are more likely to think of CDs, not LPs, as a prime source of quality recordings. On this assumption I did the great majority of critical listening using a McIntosh MCD 7007 CD player through a stepped attenuator directly into an Audio Research Classic 60 amplifier. MIT 330 SG and 750 SG were used in preference to Straight Wire Maestro interconnect and speaker cable. The front baffle vibrates considerably, even at low listening levels. Touch it lightly and one can feel the tingle of music through the fingertips. I made no attempt at dampening the faceplate, but Goldmund cones under each speaker slightly improved transparency and imaging. Two were placed under the front baffle, one under the rear base plate. They remained in use throughout subsequent listening sessions.

At first the grill cloths were left in place, but after a few days they were removed. Perhaps their removal improved the sense of space and transparency, but any improvement was slight.

The Danas were placed along the long wall of a heavily carpeted 15' x 20' room, 6' apart, 30" from the rear wall and slightly toed in. The 30" distance from the rear wall was a compromise. They needed to be closer to the wall to better support the bass, but further into the room to increase the sense of air, openness, and imaging. Compromises by definition are imperfect, but this one was workable.

LISTENING

When the Danas arrived they had some 20 hours of playing time on them. Just to be sure that they were fairly well broken in, I fed them an FM signal for another 20 hours before critical listening began. For the next few days I listened only to the Danas; no other speakers were used for comparisons, as I wanted to get a feel for them on their own terms.

The SEAS tweeter is remarkable. It is smooth, fairly open and airy, with an almost complete absence of harshness or stridency. High frequency dispersal is very good with no sense of beaming. Soundstage focus is rock steady. Instruments do not wander with a change in register, suggesting that the raw drivers and crossover components are closely within spec in each speaker (though it seems doubtful that they could be hand matched at this price).

Bass is lacking in quantity and a bit thin, but there *is* some useful low end response. Double bass and bass drum are reproduced with a taught, controlled clarity and without doubling. Just don't expect the floor to shake or the dishes to rattle. Even when the speakers were placed against the rear wall, bass response was subdued.

Although I admired what these speakers were clearly able to do, my initial feeling was that performances seemed a little distant and not fully engaging. Images lacked depth, existing on a single plane, and the sense of space and ambiance of the recording hall was weak.

I pulled the speakers back into the room, but this time I ran the signal through a McIntosh C28 preamp, setting bass controls for a gentle upwards rise reaching 6 dB at 30 Hz. Voila! Mid bass now sounded more like real music, but at the expense of all sorts of grunge supplied by the Mac preamp throughout the rest of the spectrum.

I had problems with the midrange as well. It's smooth—there is no sense of peakiness—but the midrange has a hollow, boxy quality on many CDs, and it can, at times, sound slightly glassy. These midrange colorations were noticeable on virtually every CD I tried

of string or piano music, much less so on brass and woodwinds, and all but nonexistent on close up vocal recordings.

During the first week of auditioning the Danas I heard the Beaux Arts Trio at Grace Rainey Rogers Auditorium at the Metropolitan Museum, and the New York Philharmonic at Avery Fisher. On both occasions I listened to similar music over the Danas upon returning home. I often do this after a concert, just to place my home audio system back into perspective with the real thing. Both times I sensed that the gulf which separates live from recorded music was even greater than usual. I can't really pinpoint why the Danas left me disengaged. It was as though there was something between me and the music that kept me at a distance.

Listening to a good recording on a good system does not transport me to the concert hall—I'm always aware of the ambiance of the listening room—but at times I can imagine a large window opening into the recording hall. With some systems the window is bigger than with others, and sometimes it's more transparent. With the Danas I sense a short, very short tiled hallway that separates me from the window. It is this hallway that gives a hint of glassy, hollow boxiness in the midrange.

COMPARISONS

Long term memory and live music comparisons are tricky at best. I thought I should compare the Dana 2f's with other speakers, but I was limited to what I had on hand. The Danas easily trounced pairs of two-way systems from Eico, Braun, and KLH, though my reference "Pro" version of the Quad USA Monitor provides far better tonal balance and imaging ability. The Danas on the other hand play louder, have more dynamic bass at anything above moderate listening levels, and have a superior dispersal of the high frequencies. Nonetheless, the Quads are a much better speaker—but then they cost *much* more as well.

A pair of KEF 105's, circa 1978, outperformed the Danas except for the top two octaves, where the Dana SEAS tweeter exhibited its superior upward extension, smoothness and transient speed. But this isn't a fair comparison either. The KEF 105's are a large three-way system that costs several times the price of the Danas back when a new VW Rabbit cost less than $5000.

For most of the comparisons I used a pair of Rogers LS 3/5A's, which have spent the last ten years as bookshelf speakers in a TV room. I never acquired the stands for them, so they were placed on low stools about 3 feet from the rear wall. I used the same Goldmund cones under the Rogers that I was using under the Danas. Although the Rogers and the Danas are very different speakers, I found the comparison informative.

The LS 3/5A's were purchased new some 15 years ago. The 4.5" woofer and dome tweeter are crammed into a shoe box size enclosure. Current list price is twice that of the Danas, but then again, Dana does promise a $1000 speaker for $395 per pair.

Needless to say, the Danas and Rogers sound very different. The Danas are more extended at both ends, have a more transparent top octave, and can play much louder. The LS 3/5A's are darker, a bit congested in the top octave, and tubby in the upper and mid bass. The Rogers, however, have a warm, sweet midrange that is missing in the Danas. Both speakers produce stable sonic images, but the Rogers provide a better sense of space and concert hall ambiance.

While I had both the Rogers and the Danas set up in my living room I was visited by two audiophile friends, both of whom attend concerts on a regular basis. My friends were favorably impressed by the physical attractiveness of the Danas, and were surprised by their low cost. We ended up in a comparative listening session that lasted almost two hours.

Both agreed that the Danas were more detailed, more transparent on top, and cooler in tonality. They also thought that the little Rogers provided more bass despite the factory specs, which give the Rogers a -3 dB point at 70 Hz compared to a 40 Hz bottom for the Danas. There is a bulge in the upper bass of the Rogers which on some recordings may sound boomy, but on others it provides a richness and warmth lacking in the Danas. When fed a 40 Hz sine wave, the Danas reproduce it clearly while the Rogers do a lot of doubling. At the subjective level, however, my friends appreciated the extra warmth from the Rogers in both a Mozart symphony (Liebowitz/Royal Philharmonic, Chesky CD 16) and a Brahms piano trio (Kalichstein, Laredo, Robinson Trio, Vox Unique VU 9010).

We then turned to Ray Brown's plucked bass on the Oscar Peterson Trio recording *We Get Requests* (Verve 810-047-2). They recognized the superior authority, extension, speed, and solidity of the Danas.

Ultimately my friends came to opposite conclusions. One felt that not only did the Danas offer excellent value at their price, he preferred them to the Rogers on absolute terms as well. The Danas, he argued, "were transparent, and played with clarity." The other listener liked the Rogers better. He was taken by their smoothness, warmth, and musicality.

CONCLUSION

This is a speaker which, when one looks at its specific attributes, does almost everything well. Bass is clean and has good extension into all but the bottom octave. The midrange is smooth and there is no sense of peakiness. The top two octaves are fairly open and airy. There is no sense, on most recordings, of shrillness or stridency. Dynamics are wide for a speaker of modest size, and the sound stage is stable, though lacking in both pinpoint accuracy and depth. Taken together, these are extraordinary virtues to be found in a pair of speakers that cost $400.

But this is a speaker where the sum of its parts is greater than its whole. To those who are enamored with the sound of live piano and strings, I would suggest that they look elsewhere; but to those with other tastes and interests, I can recommend these speakers for consideration.

The midrange glassiness and boxiness are much less apparent in brass, woodwind, and closely miked vocal recordings. Combined with a receiver or amplifier which could offer a slight bass boost, and placed in a non critical listening situation such as flanking the sides of a video screen, the Dana 2f's might well be a logical, cost efficient choice.

Although I am unwilling to recommend them if playing classical music is to be their primary use, one need not take my word at all. The 2f's have many positive attributes, and if any have whetted your appetite you can audition the speakers at home, risking nothing more than the cost of shipping, by ordering them directly from the factory. I wish that this offer were the standard of the industry.

Dana Audio, PO Box 1, Austin, Texas 78767; 512 454-3233; model 2f speakers, $395/pr; 43"high, 13" wide, 8" deep, 25 lbs each. Sold directly by the manufacturer on a 15 day home trial basis.

Associated components: Linn LP12/Lingo turntable w Linn Ekos arm; Koetsu Rosewood Signature cartridge; McIntosh MCD 7007 CD player; Audio Research SP 11 MK II preamp & Classic 60 amplifier; Quad 63 USA Monitor speakers; MIT 330 SG interconnect and 750 SG cable; Tice Power Block; Bob Young Line Filters; Clarity Audio silver power cables; Sonex; Tube Traps; VPI Bricks; Goldmund cones.

FOLLOW UP

Mark Block

One comment in Joel's review struck me as insightful at first, but now I find myself disagreeing with it: ". . . the sum of its parts is greater than its whole." Its parts consist of two high quality drivers and not much else. There's virtually no cabinet—which is a neat trick for a floor standing speaker. With many audiophile speakers, cabinet work and dealer mark-up are probably the main components of the cost to the consumer, so it's no wonder that Dana Audio can substantially undercut the competition's prices.

The design of the Dana 2f's is really very clever, and there's no doubt that they offer a tremendous value for the money. But there's a reason that most good dynamic speakers have solid, well-braced cabinets: They sound better that way. The case for the Danas is that at this price level a minimal cabinet is better than a bad cabinet. True. Add a great cabinet to these drivers, however, and you'd have a much better sounding speaker; there are plenty out there on the market, but many cost over a grand (and most require good stands, so add in another couple hundred).

The speakers are supported by a small wooden brace that allows them to tilt backwards for stability, but stable they're not. The top heavy weight distribution means that the Danas really flop about on carpets, and the lack of a flat bottom makes spiking difficult, so there's not much you can do to correct the situation. Dynamics and low frequency power inevitably suffer.

The Versa-Tronics woofer, as Joel points out, provides useful extension to 40 Hz. In my room the bass sounds unusually smooth and tight, but slightly shelved down relative to the midrange, which places the tonal balance on the thin side of neutral. The meat of the midrange—say, 200 to 1000 Hz—is fairly linear, but obviously colored by resonances from the baffle. The 2f's definitely do not pass the "Sinatra Test," as they lend too much chest and nose to The Voice. Of course, the only speakers that do manage to pass this test with flying colors are planar loudspeakers and some dynamic designs in the over three grand semi-stratosphere.

The upper treble is smooth and clean and all that good stuff—sorry, I shouldn't be so casual about it, because at this price point the tweeter is exceptional; it's *really* smooth—but the lower treble crossover region seems to have a few craggy peaks and valleys. Some of Bruce Hornsby's upper register piano notes on "I Can't Make You Love Me" (Bonnie Raitt's *Luck of the Draw*, Capitol C2-96111) jump out from the mix, while others seem a little inarticulate.

Whereas Joel found imaging solid but depth suppressed, I find just the opposite. Soundstaging in my room was

adequate, if hardly striking, but centered vocals were a bit wide and smeared around the edges. The notorious air conditioner in the Cowboy Junkies' "Mining for Gold" (*The Trinity Sessions*, RCA 8568-2-R) was articulately making its clicking noises outside of and behind the right speaker, but I couldn't get Margo Timmins' voice to gel realistically in the middle. And as Martin Balsam said, "If it doesn't gel, it ain't aspic." When I listen to this cut I want to imagine the beautiful, shy Margo in the room with me; the air conditioner I'll leave to the repairman.

The relatively large, shaky baffle may be responsible for the lack of focus, but it's nothing to get psycho about; the Danas are certainly respectable in this regard. A little toe-in can help, although at the cost of spaciousness. A narrow Fountainhead baffle with a sand-filled base might be the ultimate upscale cure, but the speakers would then run the risk of looking a bit like tombstones.

All this nit-picking makes me feel guilty, because these are terrific speakers for the money. The Danas play loud and clean, and have a much more satisfying tonal balance that anything else I've heard for under $500. For a little more money than the Danas you might want to check out the mail order Cambridge speakers (and don't forget to throw in some stands). Since you can't audition either Dana or Cambridge products at a dealer, you'll have to order them both with a credit card and return the ones that loose the shoot-out.

The Mirage *M490*

Kevin Carter

Why would anyone pay $500 for a pair of speakers when they could get much better ones (maybe) for only twice the price? Well, one good reason that someone on a tight budget might consider the more price conscious route is that the other $500 buys around 33 CDs or maybe as many as 100 used LPs. That is a lot of music when you stop and consider it. Now I am not attempting to put the high-end out of business by suggesting that no one should spend more than $500 on speakers, but hardware without software is of little value.

The M490s are positioned midway in the Mirage line that is targeted at the second or third time speaker buyer, the kind of buyer who has progressed well beyond his or her rack system. This series of loudspeakers is distinct from Mirage's line of audiophile speakers, although there are several common features. For example, the tweeter used in the M490 is the same as that used in the M1, save for a different faceplate. However, the consumer line is voiced with consumer expectations, not audiophile ears, in mind. This primarily affects the bass end of the frequency spectrum, where the average listener is after POWERFUL BASS. Quantity is deemed more important than quality. Otherwise, the chief designer for Mirage, Ian Paisley, places the most emphasis on smooth midrange response and good offaxis performance. He relies equally on measurements and listening to design speakers.

Many have listened (and written) much in search of really excellent budget speakers. I have myself done a fair bit in that direction. Have I found them yet? Well, no, but I have come across a few very good speakers along

the way that I would place in the budget category. Each has had its faults, and the chief challenge, given that significant weaknesses are inevitable in this price range, is to choose the speakers carefully so the faults interact with your music listening tastes and electronics in an unobtrusive fashion. What is most important to me is a reasonably accurate, transparent midrange presentation, and a moderately well-formed soundstage, where performers are separated in space to the extent that you can tell who's on first base and who's on second. It is of little relevance to review small, affordable speakers in the absolute sonic vacuum of the price-no-object context.

The Mirage M490 loudspeaker system is a smallish (9.75" wide x 19.25" high x 11" deep) two-way design supplied in a black lacquered oak finish. The woofer is a relatively conventional-looking 8" polypropylene cone job that is acoustically loaded through a port on the lower front panel. The port is integrated into the front panel in an interesting, artistic sort of way. The tweeter is a high-tech titanium dome design. In my experience, titanium dome tweeters usually result in detailed highs, often with the drawback of some high frequency tizziness resulting from dome break-up modes occurring at frequencies just beyond the audible range. In the M490, both mechanical and electrical compensation measures have been taken to tame these nasties. The tweeter is attached to the front panel in a way that minimizes its sonic interaction with the grill. The arrangement is one of the more clever solutions to the high frequency diffraction problem that I have seen.

The drivers used in the M490 are Mirage designs. Mirage has the advantage over many other speaker manufacturers of access to a shared speaker production capability (with two sister companies), allowing them firsthand control over their driver characteristics and quality. For example, the cone for the M490 woofer is injection molded rather than being vacuum formed, because Mirage believes that injection molding results in better cone-to-cone uniformity in performance. This also gives Mirage the ability to design to a price point and still maintain a well-defined performance target for a lower priced loudspeaker system.

The electrical connections to the speakers are made via two pairs of gold plated five-way binding posts located on the back. The two pairs of connections allow the speakers to be bi-wired if desired, but are otherwise shorted together using the gold plated shorting strips provided. I listened with the woofer and tweeter posts connected together.

In order to get the best sound from the M490s the manufacturer recommends that they be placed on stands. I auditioned the speakers on spiked stands 27 inches off of a carpeted floor. The best sound in my listening room was obtained with the M490s approximately three feet from the back wall, six feet apart, and toed in to face the listener some eight feet away.

Using the criteria described above for small, affordable speaker designs, the M490s scored pretty high marks. Over the course of a few weeks of listening, both casual and focused, I never felt an urge to remove them from my system; they were never irritating to listen through. I *have* felt and succumbed to that urge with other loudspeakers that have found their way into my listening room from time to time. On the other side, they have certain qualities that presumably reflect their cost and the market that Mirage has targeted, which must be considered when choosing to place them in your listening system.

My first impressions when listening through the M490s were largely in line with the design goals set by Mirage. The midrange was indeed smooth and reasonably well balanced for speakers in this price range, and while the midrange clarity was not overwhelming, there was a certain liquidity that lent an attractiveness to the presentation. The bass seemed to extend down into the 40 Hz to 50 Hz range as claimed, but was overfull and of the one note variety. Bass pitch and timbre were not well defined. All of this did not bother me that much given the conditions discussed above, but I was dismayed that the bass bloat was sufficient to have a substantial negative impact on the rendering of human voice. I think a better balance between marketability and accuracy could have been struck here by choosing a less peaked tuning for the woofer. When female voice is affected by bass boost as it is with the M490s, it is apparent that the heart of the music is at risk.

At the higher end of the frequency spectrum, the M490s exhibited a moderate rise in my listening room. This can be successfully ameliorated by decreasing the toe-in, but only at the expense of imaging capabilities. In addition, while means were taken to compensate for the supersonic cone break-up in the metal dome tweeter, they appeared to be only partly successful. The peaks present in the *a cappella* female solo, "Oh, the broom" on Harmonia Mundi HM1071, will tax the tweeter in any loudspeaker. From the M490s they elicited a spitty sound. Now, mind you, many speakers do not convey this piece of music faithfully.

The surplus of high frequency energy was also apparent listening to the excellent harpsichord recording of Soler's Sonata #99 on Pierre Verany PV8222. The harpsichord was brassy sounding, and the ringing in the highs obscured some of the detail present in this lush recording. Overall I would have preferred the M490s to err on the side of dull rather than bright, since so many modern recordings seem to possess a bright balance already. Having said all of this, I did not find the M490s so bright that they caused me to remove a recording from the platter and move on to another.

The tilted up response also had the effect of making the overall soundstage somewhat forward. Performers in most recordings appeared to reside in or just in front of the plane of the speakers. In recordings that possess a good deal of depth, such as Argo ZNF 6 (Holst, Savitri and Choral Pieces), some of the depth was apparent, but the soundstage was foreshortened so that it always seemed wider than deep. Lateral placement of instruments was relatively good, probably as a result of the M490's good horizontal dispersion. Although these budget speakers' imperfect rendering of midrange detail removed some of the localization cues that allow instruments to float in space, they nevertheless portray a convincing sonic space.

In summary, I think Mirage has developed a solid budget contender in the $500 price class. One can easily spend more money and get less speaker. Aside from my reservations about the extent of bass coloration and brightness, I found the M490s to convey music in a refreshingly natural way, no doubt due mostly to the smoothness throughout the midrange and the solid imaging performance. Mirage tells me that the addition of a low cost subwoofer they have just finished developing will allow low bass in conjunction with the M490s, and remove some of the bass bloat. While these speakers represent excellent consumer value as they are, with a few minor voicing changes they could also be great audiophile starter loudspeakers. Then just think of the money you could be spending on software to play through these babies!

Mirage M-490 loudspeakers. Audio Products International, 3641 McNicoll Ave, Scarborough, Ontario, Canada M1X 1G5. Phone 416 321-1800; FAX 416 321-1500

Associated equipment: Thorens TD125 Mk II / Premier FT3 tonearm / Grado 8MZ; modified Magnavox CDB630 CD player; updated, modified Dynaco PAS2 preamp; updated triode-connected EICO HF89 amplifier; Focal Aria 5Ti loudspeakers, Chapman T7 loudspeakers; Mogami speaker cables; XLO interconnects; MIT MI330 interconnects; original Tiptoes.

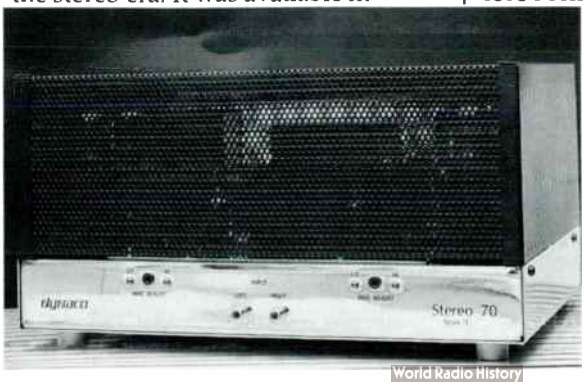
Dynaco *ST-70 Series II* Stereo Amplifier

Kevin Carter

The legendary Dyna ST70 stereo tube amplifier has recently arisen from its own ashes like the Phoenix. Well, perhaps this is a bit overly dramatic, but the reappearance of an old friend is certainly an occasion worth noting in the transient (pun intended) world of audio. The Dynaco ST70 Series II, available from the Panor Corporation in Hauppage, NY, is the first in a line of classic Dyna equipment that is being revived. It is an updated version of the original that retains the basic circuit topology and external appearance, but is otherwise different in many sonically relevant details.

The original ST70 appeared on the market in the late '50s at the dawn of the stereo era. It was available in either kit or assembled form (as were many other classic stereo amps of the era) well into the '70s. At that point, Dynaco discontinued the ST70 in favor of its line of solid state amps. Over this time many tens of thousands of these "everyman" amps had been sold for around $300. Following their commercial demise they could still be obtained on the used equipment shelf of your local audio dealer for a very attractive price.

I remember eyeing one at the local mid-fi store in Houston in 1981 that was going for $85 in very fine condition. Sadly, I only looked; I continued listening through my more powerful, but unpleasant sounding solid state Dynaco ST150. It was to require another two years of wisdom-getting before I fell to the temptation of tubes and bought a used ST70. It was a welcome relief from the relentlessly abrasive sonics of my ST150, but possessed enough of its own faults that it was eventually replaced by other tube amps.



With the coming of the tube equipment renaissance of the '80s, the ST70 became a favorite vehicle for audiophile modification. Its low used

price, availability, and quality transformers made it the ideal choice for recycling. At least a dozen companies sprang up that offered custom modification services or owner-installable retrofit circuit improvements to correct the sonic deficiencies of an otherwise solid amp. These ranged from minor component replacements to total rebuildings that left only the original transformers and metal work. Even the company that remains the foundation of modern tube audio electronics, Audio Research, once produced a radical modification package for the ST70.

When ESS purchased the remnants of Dynaco and the latter all but disappeared from view, the majority of the parts stock for both the tube and solid state equipment was acquired by a company called Stereo Cost Cutters. For the next ten years John Peterson and his staff sold new-old stock parts, and some new, specially manufactured parts for Dyna units to crazy people like me, who loved and insisted on modifying aging Dyna tube equipment. He also assembled whole kits from these parts for a few of the most popular Dyna units such as the ST70 and PAS3X preamp. Thus, the Dynaco tube equipment could still be had in new kit form throughout the '80s. And now this story merges with the present.

When Panor Corp. decided to revive the classic Dynaco line, purchasing the rights to the Dynaco name, they sought someone to manufacture their first reincarnation, the ST70 Series II. After contacting several tube equipment manufacturers, they came to John Peterson of Stereo Cost Cutters. John would seem to have been the ideal person, in view of his previous experience with Dyna hardware. John and his team are responsible for the design and execution of ST70 Series II.

Although the "skin" remains familiar, the new amp is changed in many ways. Gone are the obsolete aspects of the original amp: the rectifier tube, the FP filter cap, the screw-type speaker terminals, the octal socket for preamp power and bias set, the terrible little power switch, and the funky exposed phenolic circuit board. These have been replaced by rugged modern components that mechanically and electrically enhance performance.

Perhaps the two most important changes involve the high voltage power supply and the voltage amp/driver circuit. In the former, a solid state rectifier has been employed with a substantial increase in power supply filter capacitance. Although no power supply regulation is used, the supply is substantially stiffer than that in the original. The voltage amp/driver tube has been changed from the 7199, which is no longer available, to the 6GH8A, which is still manufactured in China. While the circuit topology has been retained, the components surrounding this tube have been optimized to give a wider bandwidth than was possible in the original. This is apparent with a few seconds' listening. One of the chief faults of the original design, the limited high and low frequency extension, has been corrected with this design.

This brings us around to the quality of music reproduction that can be expected to issue forth from the revised ST70. I auditioned it on two different systems, with speakers ranging from the Focal Aria 5Ti mini-monitor to the power hungry electrostat/cone hybrid Martin-Logan Sequel. Although this may sound absurd, I have seen (and heard) more outrageous pairings which, at low levels, were very convincing sources of musical pleasure. Mirage M-490 speakers and Chapman T-7s were also used. For most of my listening the music was provided by LPs, although CDs were also used as a source. The amplifier was fed from

tube preamps; Why use a solid state preamp to drive a tube amplifier?

To begin with, I can state conclusively that the new amplifier is a decided improvement over the original in just about every sonic attribute, just as Panor claims in its advertising. But this is not a particularly generous accolade; based on my listening experience the ST70 Series II deserves even higher praise. It distinguishes itself within its power and price limitations in three areas: bass extension, the ability to create a wide, deep image, and the inner detail that it can extract from recordings. At this point you might ask whether this is just another "rave review." Well, not exactly. The specific strengths and weaknesses of the Dynaco ST70 Series II are illustrated in the following observations, derived from my listening notes.

Although each listener (and reviewer, if the two are not synonymous) has his or her preferred recordings by which new equipment can be judged, I believe that female vocal recordings are among the most useful in this pursuit. With the ST70 Series II in the sonic chain, Julianne Baird's voice (*English Lute Song*, Dorian DOR-90109) is reproduced effectively enough, with plenty of air and no exaggerated sibilance. However, the presentation simply lacks the warmth necessary to be entirely convincing. The performances on this CD are very fine and thoroughly involving on a system with the appropriate characteristics. I found myself wandering, wishing for a greater degree of lower midrange presence.

The ST70 Series II was able to separate the instruments nicely from each other and from the vocalists in the Broadside Band's excellent recording of John Gay's *Beggar's Opera* (Harmonia Mundi HM1071). The interplay between the continuo and the soprano was particularly well rendered in several pieces on this recording. The viola da gamba was graced with the appropriate rosiny sound and was placed well clear of the harpsichord. The unique character of the other Renaissance instruments was presented largely true-to-form. However, the whole portrayal was marred to a significant degree by a recessed, thin sound. This was overlain with an edgy etched quality similar to that experienced with solid state gear of less-than-top distinction.

Initially I felt that the delicate, open character of the sound led to a clear window on the performances being reproduced in my living room. But I found that as I listened though, the presence and warmth of real music was being shortchanged. This was corroborated by listening to the "Ave Maria Gratia Plena" on *Chants Gregoriens pour le Temps de Noel* (Harmonia Mundi HM5112). Although the gorgeous ambiance present on this recording was in evidence, the richness of the male chant was not as fully developed as I have heard it with other amplifiers. The difference in pitch and timbre between voices was also diminished by the thin sound.

In spite of these limitations, the ST70 Series II acquitted itself well in the bass region, with relatively little of the infamous tube bass possessed by its predecessor. This is undoubtedly due in part to the beefed up power supply. The lowest pedal notes were relatively well controlled in the excellent Delos recording of Durufle's complete organ music (Delos D/CD 3047). Now this is not to suggest that the ST70 Series II is a powerhouse that will pump out the throbbing bass notes into your 85 dB/watt speaker. Forget it! Why would anyone purchase a 35 watt per channel tube amplifier to reproduce rock music at furniture-displacing volume levels anyway? Played at moderate volume, the amp makes bass sounds that have defined pitch and retain the character of

the instrument that made them in the first place.

Over the course of many weeks of listening with the new Dynaco in my system, I had a couple of problems that are worth noting. As I have designed and built a few pieces of tube equipment over the years myself, I have some very concrete notions about reliability in tube gear. Tube equipment is not inherently unreliable, as many assume. The standards to which it is built and how it is operated, however, have much to do with its reliability. The initial review amp went quiet in one channel after about 300 hours of operation. After speaking with the manufacturer about this, I installed a new input tube, but to no effect, so off it went to Panor.

The second review amp I received offered very similar sonic performance, but also suffered a fault in fairly short order. One of the EL34 output tubes apparently went the way of Chernobyl and took the amp out of service with curls of smoke issuing forth from the chassis. After consulting again with the manufacturer and receiving a new pair of output tubes, I installed a new fuse, a new cathode resistor for the offending tube, and the tubes. After rebiasing, music played again with no further mishaps. While the first problem was related presumably to a component failure, the latter was one I have experienced numerous times with slim envelope EL34's. These particular EL34's are simply not up to the task of dropping 450 volts at 50 mA for more than a few months of normal operation. By contrast, the Tesla EL34's take this treatment with ease and sound better, to boot. Get the hint?

How do I view this product in its totality as a tool for reproducing music accurately? Well, when mated with a system that already has some warmth to spare and is not too power hungry, I believe that the Dynaco ST70 Series II is an entry level contender to be reckoned with among tube amplifiers. It will not make "budget magic" in everyone's system, but it bears auditioning if you are looking for low-cost tube equipment.

Dynaco Stereo 70 amplifier. Price: $995 in black, $1095 in chrome. Panor Corp., 125 Cabot Court, Hauppauge, NY 11788; Phone 516 434-1200; FAX 516 434-1457.

Associated equipment: Thorens TD125 Mk II / Premier FT3 tonearm / Grado 8MZ; modified Magnavox CDB630 CD player, Denon DCD3520 CD player; modified Dynaco PAS2 preamp, Audio Research SP12 preamp; updated triode-connected EICO HF89 amplifier; Focal Aria 5Ti loudspeakers, Mirage M490 loudspeakers, Martin-Logan Sequel loudspeakers, Chapman T7 loudspeakers; Mogami speaker cables; XLO interconnects; MIT MI330 interconnects; original Tiptoes.

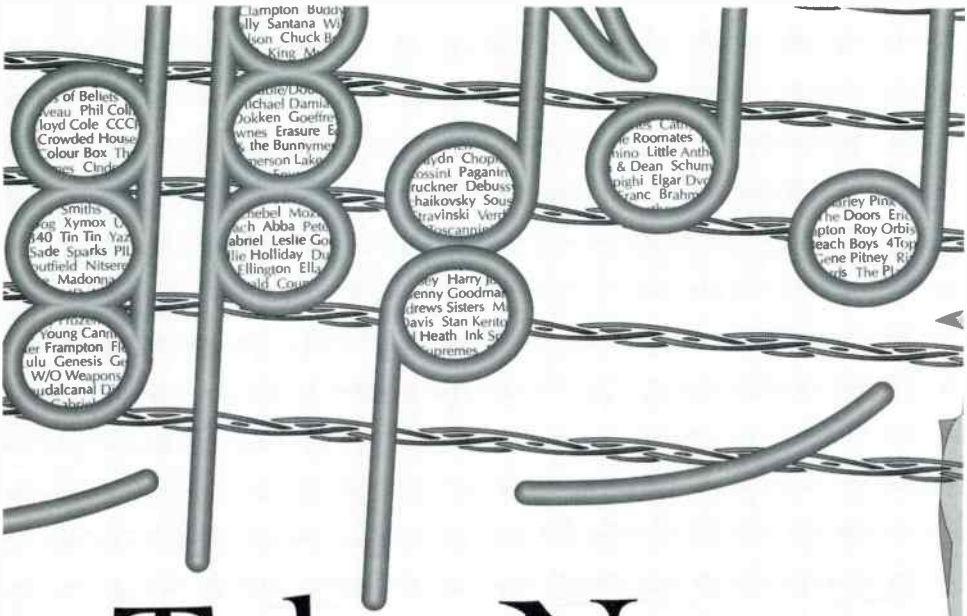
MANUFACTURER'S COMMENT

Thanks for the informative, balanced, and thorough review of the new Stereo 70. Kevin's report correctly points out the improvements we made over the original design, and verifies what most consumers and dealers say about the product. In its price range, if subtlety is more important to the listener than mere sound pressure level, it is hard to beat. When correctly used with our own PAS-3 Series II and high sensitivity A-25 Series II reference monitor, the whole, as they say, is definitely greater than the sum of the parts.

The lower midrange presence (thinness) Kevin refers to can be a function of speaker/room interface. I have heard it myself and always found that by repositioning the height of the speaker lower, I could overcome the effect. Floorstanding speakers simply need to be moved closer to the rear wall.

Reliability is a fundamental quality of Dynaco equipment. So far, the track record for the new Stereo 70 has been outstanding. Out of nearly 15 review units, Kevin's is the only one that had problems. Worse yet, he had problems twice. Fortunately, we back up the product with a 3 year warranty, with 1 year replacement of tubes at no charge. This is the best sign that we believe in our own quality and reliability. Our EL-34's, from Seimens in Germany, were selected for their long term life. There may be "tweakier" EL-34's out there in the marketplace, but our job is to provide the best balance of sonics and reliability at the lowest price to the widest audience. We feel we have achieved that goal.

Bob Rapoport,
Vice President Sales/Mktg.
Dynaco



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A Survey Of New Digital Cables From Aural Symphonics, Music Metre & Tara Labs

Shannon Dickson

My initial feeling upon being assigned the task of describing the sonic attributes of digital cables was one of foreboding mixed with curiosity: foreboding because I was fairly certain that, by the end of the review, I would be a candidate for a three-month stay at Happy Acres Home for Paranoid Hairsplitters; and curiosity about how there could be any audible differences at all between cables carrying 1's and 0's at frequencies far beyond the range of human hearing.

My trepidation was unfounded, as the differences in the sound of my system when exchanging one digital cable for another were easily heard. This surprising experience served only to increase my curiosity, and led to a closer examination of the whole digital interface, described in the companion article, "The Missing Link" in this issue. We'll look at a few of the main points from that story but will not be reviewing all the details. In fact, if you read that article first it should make this survey of cables more meaningful.

Returning to my second concern—why there should be differences in cables transmitting 1's and 0's—part of the answer lies in that we are not actually *"hearing"* a digital cable in the same way that we "hear" through our analog interconnects and speaker cable. Audio cables have a direct effect, as they carry the analog signal containing the audio band of frequencies that drive our speakers. By contrast, the digital signal is a square wave containing binary data at bandwidths ranging from 5 MHz to 100 MHz, depending on the interface, to beyond 300 MHz for prototype designs! The function of the digital cable, be it electrical or optical, is to transport this data between transport and processor with the minimum amount of errors in the bit rate and the lowest level of timing errors, or "jitter."

In the previous article we discussed how important the transport's transmitter and the processor's input receiver are to the success of a digital interface. Because of this interdependence of each component in the link, it's very difficult to make blanket statements about the performance of a given cable when used with a variety of components. This is *definitely* "try before you buy" territory! On the other hand, selecting a digital cable is not just a crap shoot. There are well-defined parameters for the transmission of a digital signal. The increase in resolution of today's processors demands even greater precision in interface technology. The following survey of several premium cables will give you an idea of what to look for.

Dedicated digital cables have lately been springing up faster than rabbits in Australia! For the past six weeks I've had a chance to evaluate three highly regarded 75 ohm electrical cables and one well-made glass fiber optic link in place of my usual coaxial and "AT&T" glass cables, both from Theta Digital. These cables were evaluated using Theta's Data Transport and balanced Generation III processor, both of which had

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RCA, as well as S.T. optical connectors. The Theta front end was routed to a Rowland Consummate, two bridged Model 1 amps and ProAc Response 3 speakers with the latest version of Cardas Golden 5-C balanced interconnect and speaker cable. All ac power was supplied via my trusty Power Wedge II line conditioner.

The three 75 ohm cables represent different approaches to transmitting the bit stream, and occupy three different price points: Music Metre's Silver Digital link, at $200 per meter; Aural Symphonics new Digital Statement, at $350 per meter; and Tara Labs beefy Digital Master, at $595 per meter. The glass fiber optic link, also by Aural Symphonics, was a sturdy two-meter length selling for $210.

As mentioned earlier, the goal of any digital link is to accurately transmit all the bits with minimum jitter. For 75 ohm cables used in the S/PDIF (Sony/Philips Digital Interface) format, that means trying to create a perfect "transmission line." A perfect transmission line would: 1) allow the signal to pass with no reduction or modulation of bandwidth; 2) have a constant characteristic impedance throughout the length of the cable, in this case 75 ohms; and 3) have a termination network designed to minimize the development of reflections or standing waves due to abrupt impedance changes at solder joints, connectors, etc., and further be able to absorb the reflections that do occur. Ideally, the cable's design will allow the signal to pass with stable phase response and minimum, yet constant, group delay of audible frequencies.

Beginning alphabetically, we have the latest effort from Aural Symphonics, distributed by Univocal Corp., called the Digital Statement (as distinguished from their highly regarded Digital Standard 75 ohm cable that runs $195/meter). Like the Standard, the new Statement adheres to transmission line theory but with a different emphasis. The idea behind their original cable was a "high speed" transmission line, whereas the Statement is a "high voltage" transmission line. According to Tom Dzurak of Univocal, the design of the Statement allows a tighter tolerance in characteristic impedance, and uses minimum flow solder techniques to cut down on reflections. The positive conductor is high purity solid copper used with a special foam dielectric versus extruded teflon.

One of the prime reasons for selecting these materials is to facilitate the use of the Digital Statement with BNC connectors. Tom, along with others I've spoken to, is convinced of the superiority of the more precise BNC hardware (over RCAs) for transmitting a digital signal, and is hoping more companies will offer these connectors on their digital products. *[BNC hardware is designed specifically for coaxial connections. The RCAs have no business whatsoever being considered as an alternative.—Tech Editor]* Other features of the Statement include a "doped" dielectric and a solid copper corrugated shield instead of the usual braided or spiral mylar shields. Tom feels this shield is superior because there is no hole for electromagnetic interference to leak through. Incidently, the Digital Statement can be used in a twin-axial configuration with XLR connectors to accommodate the AES/EBU format.

In addition to the Digital Statement, I also had a chance to listen to Aural Symphonics "Aural Optical" glass cable. Univocal has these cables assembled by a Silicon Valley firm specializing in the precise polishing and assembly of fiber optic cables, and it's obvious they know what they are doing. The quality of the polishing done to each end of the cable is very important. I've heard glass cable that was dark and defocussed, presumably due to polishing irregularities. I know that both the Aural Symphonics and the Theta fiber optic cables are in-

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spected under a microscope for quality control. The Aural Optical link comes in lengths of two meters and above, and it has the most rugged construction of any fiber optic cable I've seen.

The Music Metre Digital Cable is a different affair altogether. It began life as their premium silver interconnect and was found, through experimentation, to work very well as a digital link.

Jim Patrick, the designer of Music Metre cables, has for the past four years been making audio cables that have a good reputation for transparency, tonal balance and excellent value. The version reviewed is Jim's latest, and has 12 thin, solid silver conductors that are 99.99% pure instead of the six conductors used in his older version. Each conductor is sheathed in a low-temperature FEP teflon dielectric, and all 12 are woven together in a flat ribbon with teflon monofilament thread. The ribbon is then surrounded by a bright green woven plastic cover that is *very* flexible. The RCAs used are very nice silver-plated brass.

Because of its origins as an interconnect, this cable has some features not normally seen in a digital cable. There is no shield, for instance, due to Jim's belief that unshielded interconnects are more transparent. I didn't have any RF problems with the Music Metre in my system, but if you are prone to such interference, you should make sure the lack of shielding won't be a problem.

Tara Labs, like Univocal, has focussed a lot of time and energy in developing and improving digital cables. Their Digital Reference model has been well received over the past year-and-a-half. Now comes an all-out effort in the form of the huge Tara Labs Digital Master. At $595 per meter, the Digital Master is the most expensive cable in this survey, and has the most elaborate construction. A close inspection reveals the obvious care, quality and man-hours put into its making. This cable is *really* stiff! Be sure your RCA connectors are securely mounted in your equipment! Actually, a careful shaping of the cable should prevent too much stress on your connectors; just don't stack the transport and processor or place your equipment rack too close to the wall.

The Digital Master uses a solid silver conductor with both braided *and* foil shielding, also made of silver. Great care is also employed in terminating the cable into high quality RCAs to minimize reflections. Part of the painstaking assembly of this cable involves wrapping over 53 layers of thin teflon around the entire length of the cable while making sure that the distance from the outer layer of the dielectric to the conductor never varies by more than 1/10 of 1%! No wonder the cable is $^{7}/_{16}$" in diameter and so stiff.

Matthew Bond of Tara Labs stated that such precision was necessary at each step of the assembly process in order to achieve a constant impedance of 75 ohms, minimum reflections, maximum rejection of RF and EMI interference, and the ability to transmit a signal at up to 10 *Gigahertz*! Yeah, that's right, 10 Gigahertz. In practice, that simply means that you're not likely to encounter bandwidth restrictions with the Digital Master. The actual bandwidth of a particular interface is determined by the transmitters and receivers, and varies depending on the format and manufacturer. In any event, there is no doubt that Tara Labs new cable is a quality piece of work.

OK, already! I'm getting to it! I think the most useful way to describe the sonic effects these cables had on *my* system is to point out those areas in which the sound was altered from my regular Theta optical cable (or from each other)—either for better, for worse, or somewhere inbetween. I've already described the attributes of the system using Theta's new Gen III processor (Vol.

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Robert Long with Edward J. Foster
Audio, April 1992

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RIAA Accuracy	Within ±0.2 dB
THD	0.02%
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S/N, A-Weighted	MM phono, 82 dB; MC phono, 70 dB; high level, 89 dB
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Input Sensitivity	MM phono, 0.8 mV at 1kHz; MC phono, 0.09 mV at 1 kHz; high level, 45 mV
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MM Phono Input Capacitance	Adjustable
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1, No. 2, Spring 1992). Keep in mind that systems with less sophisticated input receivers and reclocking circuitry than the Generation III will likely show *greater* differences between these and other cables! While top processors will shine with the best cables, a more modest system can be much improved with a superior link.

After burn-in on a Duotech Cable Enhancer, I listened to each cable exclusively for about 5 days with a wide variety of music. I spent another 10 days comparing one cable to another with familiar jazz, classical and rock disks as well as specific tracks off Chesky's and Stereophile's second test CDs.

The final result is that they all sound *exactly* the same. . . . NOT! *[Party on, Shannon.—Wayne]*

Beginning with Aural Symphonics Digital Statement, this cable maintained excellent tonal balance with all material. The placement of images was very precise. There was a very nice extension and definition in the treble region. It had almost as much air and natural reverberant decay as the Theta and Aural Symphonics optical systems, which is saying a lot. The images had a bit less body and three dimensionality than with the optical systems, but then this area is the fiber optics' strong suit.

Soundstage width and depth, dynamic swing, and revelation of inner detail were first rate. A very solid performer with a particularly nice treble presentation. I'd love to hear this cable in a system that had BNC connectors in order to take full advantage of its design parameters.

The Music Metre Silver Digital cable surprised me the most because I expected the least from it due to its analog origins. The first thing that struck me when listening through the latest version of the Music Metre was how clear and open the soundstage was. Transients were very good though a touch softer than either the Statement or Tara Labs Digital Master. It had very good detail in the midrange, and the presentation overall seemed more liquid with the Music Metre than with the other electric cables. As I mentioned, the soundstage layout was very good; however, the outline of images was slightly rounded and softened compared with the Statement or Digital Master.

This cable is *very* easy to listen through, with great tone. I suspect that the Music Metre would be a good choice for systems that tend toward the bright side, and at $200 per meter it's a good bargain.

The Tara Labs Digital Master is remarkable in several respects. For one, the bass definition is outstanding. Transient attack, articulation and inner detail are the best I've heard. It immediately impresses you with its fast, clean performance. I also noticed an improvement in rhythmic pace with the Tara Labs vs my reference cables.

Like the Aural Symphonics' Statement, the Digital Master has very good image placement and stability. The tonal balance of this cable is lighter, particularly in the treble region, than the other cables in this survey. In conjunction with the good inner detail, one hears well-developed harmonic texture with appropriate music. Reverberant decay of upper frequencies is a bit shorter than with the Music Metre or Statement, conveying a somewhat dryer sound, particularly with cymbals.

The Digital Master is *not* an inherently bright cable, but because of its excellent resolving powers, accuracy, and articulation, coupled with the slightly dryer treble performance, I would audition it first before buying when it is destined for a system that is already too bright. I bet this cable would be a welcome addition to any system based on Ultra Ana-

log DACs or tube equipment. The Digital Master is an excellent cable and sets new standards in the areas of transient attack, articulation, detail and bass definition.

Last but not least is the Aural Symphonics "Aural Optical" glass cable. Both this cable and Theta's glass link are excellent examples of fiber optics done right. The only real difference in sound between the two was a slightly better bass quality with the Aural Symphonics, though this could be a sample variation. The bigger difference is between the fiber optic and the electric cables. The Tara Labs Master and Aural Symphonics' Statement both have better transients and articulation. I preferred the overall tonal balance through the Statement and Music Metre. The Tara Labs is also a bit more detailed.

However, the Aural Optical conveys a wonderful soundstage, with a very natural and uncanny sense of body and presence to the images. The images seem "fleshed out" and very tangible. In addition, the music is very open with excellent ambient information, though the leading edge of notes seem a tad softer and less precise than with the electric cables. I also find an airy, delicate musicality with good fiber optics that's hard to define yet very appealing. The tonal balance and definition with the S.T. interface is very good, and suffers slightly only in direct comparison with top electric cables like the ones above. (This sonic description of the Aural Symphonics optical cable was without the use of "Optigue." See update below.)

One important observation in comparing fiber optic to electric links is the necessity to unplug the electric cable when evaluating the glass cable. Apparently, with the electric cable connected, you lose some of the benefits of electrical isolation conferred by the fiber optic system. Whatever the explanation, the optical interface sounds much better without electric digital cables installed.

So what does all this mean? For one, I'm not being ambivalent when I say that none of the cables in this survey was a disappointment. I honestly can't imagine anyone being unhappy with any one of them. These results have also shown me that there are now electric cables that can compete with, and in some areas surpass, glass fiber optics. However, the fact that they all had a noticeably different impact on the sound, each one having points in its favor, means that digital interface technology has yet to fully mature.

Therefore, some degree of compromise is still required in our choice of format and cables. Luckily, these components have now improved to the point that the choices are largely a matter of taste and preference rather than of gross differences in quality, as was the case not long ago. In fact, I'm convinced that the capabilities of each of the cables in this survey, glass and electric, exceeds the performance of the other components in the interface, and are unlikely to become obsolete anytime soon.

Until we see further improvement in transmitters, input receivers and connectors, or the wider use of the AES/EBU format, or the introduction of a better fiber optic system like the new laser-based components being developed by Theta, we will still have to accept the digital interface as a variable in the sound quality from compact discs.

OPTIGUE UPDATE

If you read the postscript to "The Missing Link" article, you'll recall I mentioned a new product called "Optigue" available from Theta Digital dealers for about $50 per vial. I just received a sample and it's a definite winner!

Briefly, you apply a dab of this clear gel to the ends of fiber optic cables and then carefully insert it in the connectors. The gel then fills the narrow gap between the cable and LED in the transmitters and receivers, reducing the refraction of light caused by the gap. The results are excellent. There is an immediate improvement in definition and inner detail, particularly in the upper frequencies. Bell tones and transients become crystal clear and ambient cues are noticeably enhanced. In short, there is better focus and articulation—two areas where the S.T. fiber optic format has suffered compared to the best electric systems. Several CDs which contain spitty sibilants were rendered more listenable after applying Optigue.

I can't tell you how often it needs to be reapplied, as I haven't used it long enough. It should last quite a while if you don't remove your cable a lot. If you have either S.T. or TosLink interfaces, Optigue is a must!

POSTSCRIPT

During the course of assembling a first class playback system, it seems only natural that our attentions (and budgets) are drawn to technologically sophisticated glamour products like preamps, processors, speakers and the like. While this focus is all well and good, important matters like room acoustics are dealt with, if at all, only as an afterthought—or something to be addressed if and when you win the state lottery. This is a big mistake. Practically every listening room will impose serious limitations on your ability to appreciate what your system is capable of until the fundamental room acoustics are properly addressed.

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I recently added eleven half round tube traps from Acoustic Sciences corporation to the first reflection points on my ceiling and side walls in addition to 4 full round traps in the corners and midwall behind my speakers.

The transformation was startling. My room took on a degree of control, articulation and clarity that far surpassed the level of improvement afforded by most component upgrades. I hope to examine this issue in more depth later. In the meantime, before you drop your next house payment on the latest version of the "Magic Musicmeister IV," try to tame your room.

Associated equipment used in this review: Theta Data Transport and balanced Generation III processor; Jeff Rowland Consummate Preamp and two Model 1 amps (bridged); Powerwedge II line conditioner; Cardas Golden 5-C balanced interconnect and biwired speaker cable: Pro Ac Response 3 speakers; 12 ASC tube traps (full round and half rounds); Grado HP-1 headphones and headphone amp.

Aural Symphonics/Univocal Corp., P.O. Box 730036, San Jose, CA 95173-0036. Phone (408) 270-6033; FAX (408) 270-6039. Mr. Tom Dzurak. Digital Statement: 1 meter for $350.00; Aural Optical Cable: 2 meters for $210.00.

Music Metre Cables, Second Opinion Audio, 249 N. Brand Blvd., Suite #701, Glendale, CA 91203. Phone (818) 242-4535; FAX (818) 242-4415. Mr. Jim Patrick. Silver Digital Cable: 1 meter for $200.00.

Tara Labs, 2567 Siskiyou, Ashland, OR 97520. Phone (503) 488-6465; FAX (503) 488-6463. Mr. Matthew Bond or Mr. Joe Abrams. Digital Master: 1 meter for $595.00.

KIMBER KABLE'S *POWERKORD*

Shannon Dickson

This brief look at Kimber Kable's new ac "PowerKord" should in no way be taken as a definitive review. Several extenuating circumstances existed during the two months I had the cords which prevented any *absolute* conclusions. However, I did notice several consistent results, and those, along with a description of these cords, are noteworthy.

Kimber Kable has been making interconnects and speaker cables for over a decade; they have stood the test of time for quality and value. Ray Kimber has now added to the line a new ac line cord for use with components having detachable IEC plugs. The PowerKords, as they are called, are very well made and consist of a corrugated black plastic jacket covering a multi-conductor braided design.

The idea, according to Kimber advertising, is to "leave the magnetic field at the wall." The multi-conductor configuration divides the strong electromagnetic field into smaller fields; the braided design then cancels the fields. An additional benefit of the braided design, according to Kimber, is that it helps eliminate interaction with and interference from outside sources such as other power cords, transformers and interconnects. The PowerKord has an IEC 15 amp female connector on one end and a heavy-duty, hospital-grade, right angle or straight three-prong grounded plug

made by Hubbell at the other. It is also available with pigtails for soldering directly to components not having the IEC socket.

The biggest problem I had in making a thorough evaluation of the PowerKord was that I only had two of them, and I have five components in the chain with detachable cords. To get the best results from any specialty power cord, you really should use them with all components. In addition, I have an Audio Power Industries PowerWedge II line conditioner, which has made a great improvement in the quality of power fed to my system.

Last but not least, power cords, by nature, don't allow accurate A/B comparisons. Turning off your system to change your cords alters the sound of each component to varying degrees and for different lengths of time. This makes it extremely difficult to assign changes you do hear to the device under test! The real benefits of power cords *[as with interconnects and speaker wires—ED.]* are best discerned over long periods of time. Well, enough caveats! You get the picture.

In spite of these obstacles, I did experience a consistent, repeatable benefit when substituting the PowerKord for the regular factory cords of my two Rowland Model 1 amps—with *all* components plugged into a regular power strip instead of the PowerWedge. The clear improvements included greater focus and a noticeably quieter background. If I had all five components equipped with Kimber PowerKords, I'm sure the positive effect would have been more pronounced.

However, the overall negative decline in sound quality as a result of removing

the PowerWedge from the chain restricted the amount of time I could listen to the system; in fairness to other products I'm reviewing, I need a system performing at its peak. When using only two PowerKords with the amps plugged into the PowerWedge, I didn't notice a real improvement, although it didn't hurt either. I suspect that the filtering and isolation job performed by the PowerWedge, particularly with digital components in the chain, left little for the PowerKords to correct.

The bottom line is, if you're using ac straight from the wall (this includes power strips) or if you're having specific line interference problems, I can definitely recommend the Kimber PowerKords. By the way, they are very reasonably priced. If you use a PowerWedge, be sure and try a full set of PowerKords before you decide.

Kimber Kable, 2752 South 1900 West, Ogden, Utah 84401. Phone 801-621-5530. Fax 801-627-6980. PowerKords: 4 foot length for $115.00, 6 foot for $135.00, 8 foot for $155.00, 10 foot for $175.00.

The *Micromat Gold* CD Damper

Russell Novak

At about 10 p.m. one night the telephone rings.
"Russ, is it too late?"
"No, who . . ."
"It's me, George."
"Hi George . . . who?"
"George Louis, the inventor of Finyl. Not too late is it?"

There followed an informative 2 hour discussion with this mad inventor of the Golden West and president of the San Diego Audio Society.

First, he wanted to tell me about what he has dubbed "The Louis Effect." Through long experimentation, George has determined that CD players will sound better if, after hitting the "play" button, they are "paused" before beginning to play the track selected. This is because, according to George, it takes the player some time to recover from the vibrations caused by the mechanical start up and the servo tracking system. The vibrations affect the tracking and consequently the sound of the player.

How long should you pause before play? George says improvement can be heard after 15 seconds and will keep improving for up to 2 minutes. He says it takes too long for the player to dissipate these resonances if you go directly to "play."

I tried it and couldn't verify the findings. You try.

He told me something about Finyl. It's water soluble, so it can be washed off a CD. The original name of this substance was to be Finyl, The Vinyl Solution. Yes, it was originally intended to be a record treatment which, after it was found to work on CDs, was modified to specifically fit that format. George said he experimented with hundreds of substances before settling on the current formula. Like most of the CD tweaks out there, the scientific basis for why it works can't really be explained by its

own inventor. The theory is that it provides a smoother optical interface between the CDs plastic and the air. But the proof is in the hearing.

George used to be a lawyer and has been a lifelong audiophile. He now has devotes all his time to tinkering and inventing. He mixes up Finyl to 99.9% purity in his house. Not even the folks at Transparent Audio Marketing know what's in it.

George's latest product is the Micromat Gold CD damper. This is a heavy mat which, aligned with and stuck to the back of a CD before playing, (you guessed it) improves the sound.

The Micromat Gold comes packaged in a CD case with a foam pad and a large metal plate which attracts a magnetic layer in the Micromat to hold it flat when in storage. The Micromat Gold is flexible, although the instructions warn you not to bend it too much in removing it from the storage case or the CD itself. The Micromat has a "nonslip" surface that adheres to the back of the CD. It is made of seven layers of seven different materials designed to soak up vibrations from the CD. Its weight also helps stabilize its rotation in the player.

To use it, the instructions recommend that you remove the Micromat from the case and place the foam pad over the magnet. Place your CD face down on the foam mat and then place the black side of the Micromat down on the CD, aligning the center hole and edges. I personally find it easier to hold the CD in the air against a light background with one hand and orient the mat with the other hand. In either case, with the face of the CD on the foam mat, the Micromat damper is then rubbed onto the

back of the CD to increase the contact area.

The Micromat will adhere to the surface. Peel it off when play is finished. The effectiveness of the adhesive surface can be rejuvenated by washing with mild detergent and water. Lighter fluid on a tissue paper will also remove dies and paints that won't come off with detergent. Follow with detergent and water.

The longer you leave the Micromat on the CD, the harder it will stick. Don't leave it on over night (though I have, to no detrimental effect). It has never pulled off any part of the label, but it has removed some magic marker and some green enamel paint when left on too long.

What does it sound like? First and foremost, it increases depth and pushes back the front of the soundstage about a foot. This effect was consistent with every CD played. It also tightens bass and increases the specificity of instrumental placement within the soundstage. The sound seems more coherent, harmonics richer. A lot for one product. It's very good. This mat allowed me to differentiate more clearly a sustained organ note played from within the body of an orchestral crescendo on Klemperer's version of the Mahler #2 (EMI CDM 7696622).

Robert (Hound Dog) Clark, the man who scored 77% on a New Jersey Audio Society blindfold test of CD treatments, the man who can beat his dogs to the food dish from anywhere in the house, heard it instantly.

Is it worth $135 (discounted to around $110)? Well, you will be using it with *all* your CDs. It also allowed me to play

some warped CDs I couldn't get the machine to track otherwise. The effect is somewhat different—and more noticeable—than a surface treatment like Finyl, but the two treatments are perfectly compatible. Reproduction appears to be enhanced across the board. A moderate upgrade in CD players might show less improvement and be more expensive.

MICROSCAN *ANTI-RESONANT SYSTEM*

Shannon Dickson

In our constant quest to lift the next "veil" between us and the live musical performance, we audiophiles are notorious for coming up with creative (or is that harebrained?) tweaks, ranging from cable cradles and magic measles to disc dampers and rubber pucks. While some of these devices become long-term additions to the search for better sound, most merely result in an alteration of the sound; it is the rare exception when an accessory product makes an across-the-board, unmistakable *improvement* to the fidelity of music reproduction.

The Microscan Anti-Resonant System is one of those happy exceptions. It is *not* one of those products that, coupled with one's eager anticipation, make dramatic improvements to the sound on the first day only to leave you doubting a week later that there was any benefit at all. In fact, the Microscan system is so elegantly simple in concept, and makes such good engineering as well as common sense (like many genuine advances), I'm surprised it wasn't developed earlier.

The Microscan Anti-Resonant System is a device designed to minimize the audible effects of loudspeaker enclosure resonances and vibrations. It is based on the principle that dissipating resonance-causing energy through conversion to heat is more effective than trying to resist the energy. The units look, at first glance, like a car amplifier and attach to the back of loudspeaker cabinets. Each device is made of a series of six thin rectangular damping plates that are made from a polymer material.

They come in three sizes for large speakers, small speakers, and subwoofer enclosures. They are held in place on the rear of the cabinet via a thin, removable, magnetic pad. The pad is attached to the speaker with an adhesive back to prevent marring the wood finish, and it is removable. This arrangement eliminates the need for mounting hardware which could deface the speaker.

The large version I used on my ProAc Response 3 speakers measured 8" wide by 9" high by 3" deep. Before I proceed, let me assure you that there is no need to worry about any adverse effect due to the magnetic pad. No significant magnetic field will develop since the devices aren't electrically connected to anything. The magnetic effect drops to zero at distances less than ½" from the pad.

The Microscan system is the brainchild of Leonard Thomasen. Leonard has been involved in loudspeaker design for many years, and after taking a thorough look at the real advancements made in everything from front ends and amplification through cables and driver technology, he decided to focus his efforts on one of the most notorious

problems and a true bottleneck to high fidelity: loudspeaker panel vibrations. Mr. Thomasen has written a white paper of uncommon clarity from which I will paraphrase.

In order to understand the principle behind the Microscan system and how it differs from other damping or tuning devices, it is important to remember that the source of all vibrations and sound is mechanical energy. All matter can either transmit or absorb mechanical energy at different frequencies depending on the molecular composition and density. This brings us to the problem of loudspeaker enclosure vibration.

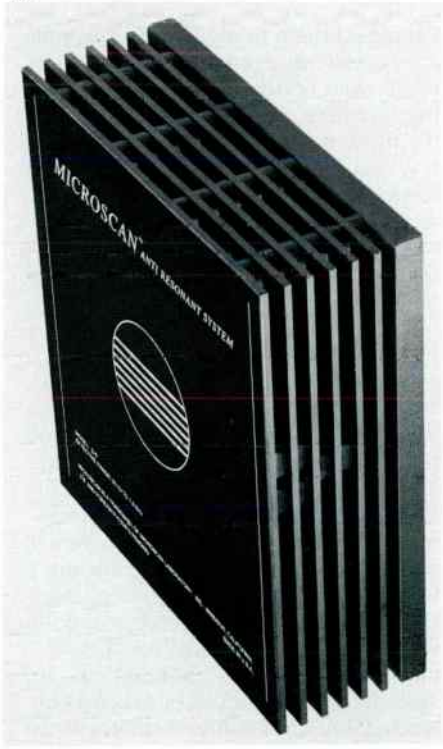
The requirements of a good speaker box include maximum possible rigidity. The cabinets themselves are normally very effective transmitters of the mechanical energy generated by the drivers. The drivers propagate this energy directly through their mounting frames as well as through airborne acoustic sound pressure within the enclosure, which travels throughout the entire speaker within milliseconds.

These resonances create problems in several ways. One is that the acoustical output of the enclosure can reach levels close to that of the drivers themselves! It's clearly audible and has greater distortion than the direct sound of the drivers. In addition, because these vibrations are delayed in time relative to the direct output of the drivers, the audible resonances from the cabinet will be slightly out of phase with the direct sound. A third problem occurs when the amplitude of the enclosure resonance is either additive or subtractive with the amplitude of the direct signal, altering the frequency response.

The net result of these speaker resonance problems is a *smearing* of the overall clarity of the sound, with a degradation of timbral accuracy and image definition. Even very expensive loudspeakers are not immune to the problems, although by using super thick, well damped and properly braced construction (or some novel material like Corian), the negative effects of resonances can be reduced.

The Microscan Anti-Resonant System takes a different yet complimentary approach. When applied to the rear panel of loudspeakers, this interface behaves like a reactive mass-spring system. The mechanical energy of the drivers is transferred directly through the enclosure panel, exciting the Microscan's damping plates into sympathetic resonance, which causes this energy, through hysteresis, to be dissipated harmlessly as heat.

A close analogy can be made to a Newtonian cradle—those shiny steel balls suspended in a row by separate strings, each ball at rest against the other. When you pull the first ball back and drop it against a second ball that is in direct



contact with a third, the middle ball doesn't move but transfers the energy to the third ball, which immediately takes off. Similarly, vibrations from the drivers will pass through the panels of the speaker cabinet and into the Microscan unit on the back. The analogy stops here, for unlike the steel balls which transfer force back and forth, the recovered energy is prevented from returning to the cabinet. Instead, the vibrations are dissipated. Incidentally, the damping plates are tuned in sequence to absorb resonances from 20 Hz to 1.5 kHz, the area where most trouble occurs.

Fair enough, in theory, but how well does it work? Well, the Microscan system won't transform a Polk into an Avalon, and it doesn't replace good fundamental cabinet design using very rigid, well-braced structures. Those qualifications aside, it works very well indeed.

I attached them to my ProAC Response 3's—excellent speakers in their own right—and noticed an immediate opening up of the soundstage. Every part of the presentation took on greater clarity. It was sort of like having your windows scrubbed clean after your eyes had adapted to a gradual filminess. What seemed perfectly acceptable before was thrown into contrast by the increase in focus.

Harmonic detail was rendered with greater fidelity, and images took on a bit more body and dimension. Even though these benefits were readily noticeable, it took my ears a few days to appreciate all the subtle enhancements to music that had been obscured by resonant energy, now removed. Yes, the overall effect is subtle yet significant. I hesitate to use this descriptive phrase because I see it used so often as a polite way of describing an effect that is barely perceptible. With the Microscan system the term should be taken as intended; the units confer refinements to the presentation that are musically meaningful.

I did notice one anomaly with the units on my Response 3's: The music seemed slightly quieter and more polite for a given volume setting. A quick check with my dB meter revealed no differences in SPL. I hesitate to label this effect a drawback, and in any event its impact upon the music—particularly in light of the clear-cut benefits to the system—was minor.

All of the positive effects noted above were achieved using a single pair of the devices on my Response 3's, and after further experimentation with other speakers I feel confident in stating that one pair of Microscans is a sure bet on most box speakers. Two or more pairs may extend the benefits on certain speakers, but could just as easily result in overkill. With two pairs of the large size units on my Pro Acs, I noticed a slight reduction in ambiance and air in addition to an even tighter bass presentation. On the other hand, a colleague obtained excellent results with a second pair on a very expensive, very rigid speaker system. Before you plop down cold cash for a second pair of anti-resonant devices, make sure your dealer will take them back if you find your speakers sound best with only a single pair.

It seems clear from this experience that the very best results will be obtained by some creative speaker builders who incorporate the Microscan devices into the design and fine tune the speakers accordingly. To achieve this level of audible resonance reduction through traditional cabinet design would add a significant increase to the price of a loudspeaker. A pair of Microscan Anti-Resonant devices for large speakers costs $150 retail.

Leonard Thomasen and his staff deserve congratulations for their vision and execution of this disarmingly sim-

ple, yet effective, aid to our quest for the grail of realistic music reproduction. And thanks to Jeff Sellman of Stereo Plus in San Francisco for introducing me to this product.

Microscan Laboratory, Inc., 7761 Bell Road, Windsor, CA 95492Phone (707) 838-3545; Mr. Leonard Thomasen. Microscan Anti-Resonant System—Large D-8: $150.00/pair; Small D-6: $130.00/pair; Subwoofer SW-1: $70.00 per unit.

Associated Equipment: Theta Data transport and Generation III processors (balanced); Rowland Consummate preamp and (2) Model 1 amps (bridged); ProAC Response 3 speakers; Cardas golden 5-C interconnect and speaker cable; PowerWedge II; Kimber PowerKords.

Audio Power Industries Power Wedge

Mark Block

Several of us here at *The Audiophile Voice*—Bill Wells, Shannon Dickson andI—have been using Power Wedge AC line isolation devices for the last year, and we've been thrilled with the results.

My Jadis Defy 7 is plugged into a Power Wedge V (designed for large power amplifiers). The rest of the system, which includes a CAT preamp and Theta Gen. II processor, plugs into a Power Wedge II (which has a 150 watt receptacle for preamps requiring a little extra juice). Each Power Wedge mates to its own dedicated 20 amp line with hospital grade outlets.

The most obvious audible effect of the Power Wedges on my system was a dramatic improvement in bass extension and control. Low frequency response is now deeper and more impressive, with added power and bloom. Bass lines are more dynamic and easier to follow.

The Power Wedges have also made the system a little more revealing. For instance, the difference between my stock Philips 960 CD player and the Theta Gen. II converter is now much more obvious—the differences lying primarily in the area of dynamics, punch and pace. *Nota bene*: By using the word *revealing* I do not mean to imply that the system is less forgiving—just the opposite, actually. High frequency detail and air stand out from the mix more clearly, but without the slightest suggestion of added brightness.

Interestingly, I had been using a PS Audio PowerSonic 500 watt transformer on the digital electronics, but not on the CAT preamp—reason being that the CAT's power supply hummed badly when plugged into the PowerSonic transformer. I was a little dubious, therefore, about the Power Wedge's 150 watt outlet handling the big CAT. No need to worry; the CAT was contented as a kitten. No hum, no buzzing, just better sound. (Designer Ken Stevens says that actually 150 watts is much more than necessary—which

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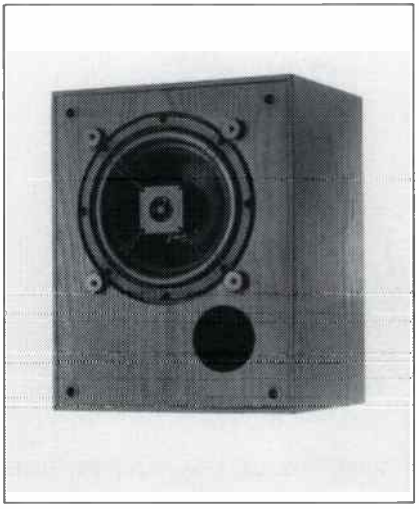

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doesn't explain why the CAT gave the 500 watt PS Audio transformer fits.)

Bill Wells reports that the Power Wedges in his system lowered the noise floor appreciably, producing a quieter background and a cleaner sonic picture. Subtle textural details were more noticeable, as if the volume had been turned up, but without any strain.

The fact is, these products work well in a variety of systems, and they're a relative bargain to boot. We were planning to publish more extensive coverage of the Power Wedges until Shannon alerted us to substantial alterations in the product line. Worthwhile circuit and layout improvements are said to have been incorporated, and the confusing multitude of similar products has been thankfully simplified. Power Wedges I and II, for instance, are now blended into a single model called the Power Wedge 116.

Shannon has been using one recently, and has noticed greater control, better articulation, and an even lower noise floor. We'll carry a full review in the next ish.

Hip Cables For Hi-Fi Handicappers

Russell Novak

They have a saying at the track: "Horses for courses!" Which is to say that, in spite of the use of adjusted speed figures (a sophisticated handicapping tool not available to previous generations of players), some horses will defy the numbers and win at a particular track. I learned that lesson early in my handicapping career when I had Otter Slide picked over Maudlin by a whopping 5 lengths. Some old crone told me to watch out for Maudlin, who always "woke up" when the racing shifted from Belmont to Aqueduct in the fall. Fool, I thought, my speed figures don't lie.

I don't have to tell you what happened. Maudlin loved Aqueduct. Easy Goer always liked Belmont. He was invincible there. Deputed Testamony [sic] loved Pimlico. There is no ultimate truth in thoroughbred racing. It's a game of infinite variables. Each race is unique. The more you study the variables, the more you win. It takes practice and application. Experimentation. It's not unlike being an audiophile.

There is no ultimate truth in our game either. Yes, it's true: Some components are better than others. In another piece in this issue, Jon Schleisner has made an eloquent appeal for accuracy and truth in component design, pointing out that some brands are designed with a particular "sound" in mind. These components may sacrifice ultimate accuracy and transparency to achieve that sound and, of course, they should be avoided.

But *after* you pick your amp, preamp, and speakers, you may find that your setup is too bright, or too dark, or too thin in the midrange. That's the time to start listening to cables. That's the time to start matching strengths to weaknesses, compensating for minor shortcomings. It doesn't mean you are compromising neutrality or sacrificing

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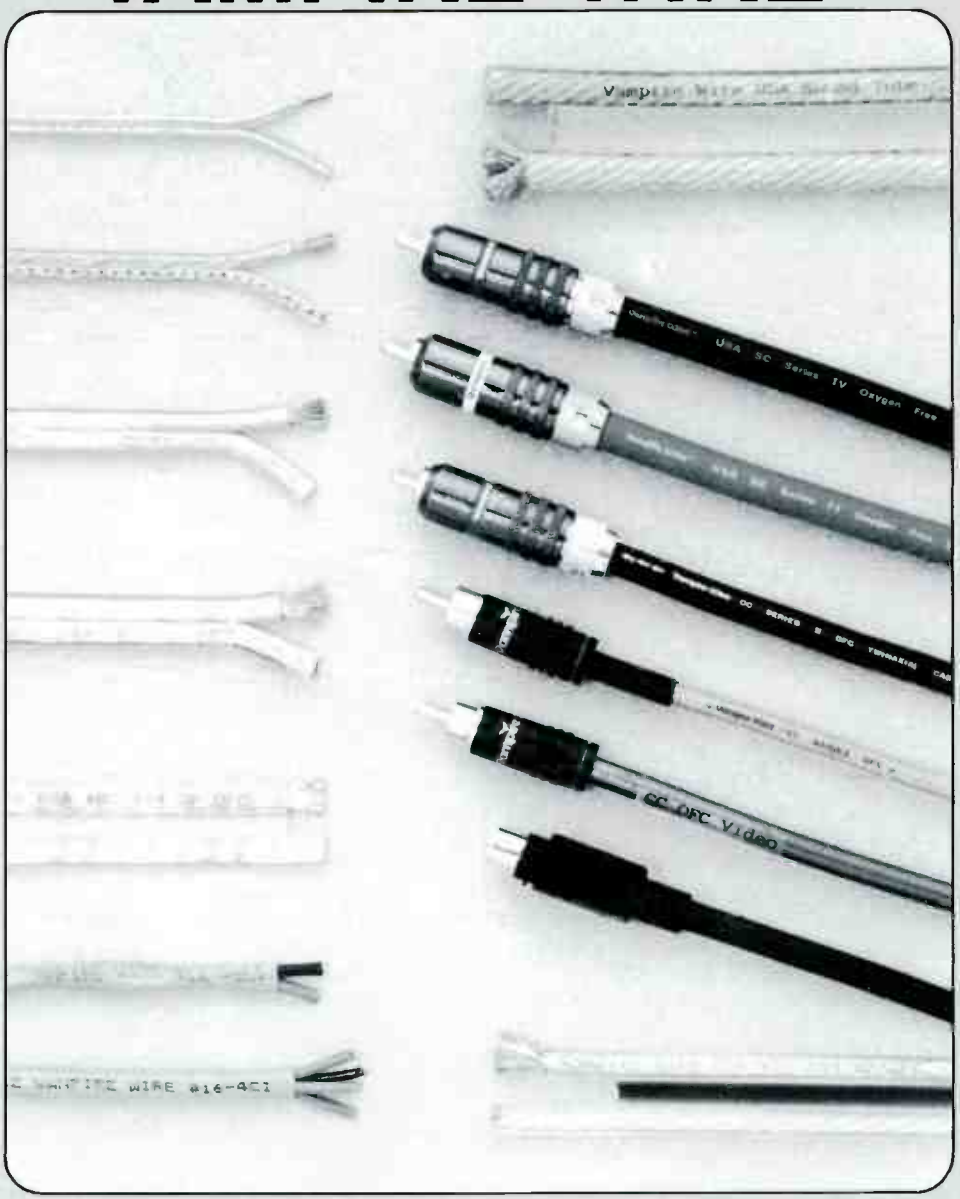

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detail, it means you are using your ears to make your system musical and enjoyable and accurate. You're using cables to fine tune your system. After all, the musical experience is an emotional thing—your system ought to sound musical and enjoyable over the long term.

We have 6 interconnects to evaluate here, and some of the manufacturers have supplied their mid-price and economy models as well as some specialty cable, speaker cables, and AC power cords, all of which will be evaluated in featurettes attached to the main article.

I really like the "in my system" concept begun in the *Sounds Like. . .* cable survey of a few years ago. You may assume that all comments apply to what the cable is doing *in my system*. It is well known that cables can sound different from system to system. This would seem to invalidate a cable survey except that, in my experience, it is less probable that the cable will change its character entirely than that it will simply match one system better than another.

If, for example, Cable A has a less pronounced treble range than Cable B when played in (neutral sounding) System 1, the difference—the direction of change—will probably stay the same if played through (a bright sounding) System 2. It's just that Cable A will be a better match System 2. It's much less likely that the type of cable differences will change *relative* to each other in different systems.

Therefore I'm going to try to identify the relative strengths and weaknesses of the cables and let you do the matching based on your assessment of your system. In all cases, of course, you must listen for yourself. Audiophilia, like thoroughbred racing, is a game of infinite variables. Grab your Racing Form and let's begin: One furlong = 1/8 mile . . . er, ah, wrong hobby.

We've got some really interesting cables. Five are new models, four of those from new manufacturers. The sixth is an unusual cable that has been underexposed in the press and has considerable merit.

All cables were given 60 hours of break-in on the Duo-Tech Cable Enhancer and then another 24 hours with a musical signal prior to formal listening. I chose musical material based on what was intimately familiar to me; few were "audiophile" recordings. Some were chosen specifically because they had faults—bright or dark, soft or lean—because I wanted to see what the cables would do with them. (The recordings are listed at the end of this article.) The voices of Frank Sinatra and Kiri Te Kanawa were used to test "truthfulness." Flaws in voices are more readily apparent than with musical instruments.

One last caveat: These are all top quality cables. There are no dogs in this group. The differences we will discuss are fine ones, so that specifying the special attributes of one cable does not imply a *lack* of competence for the rest of the bunch.

DISCOVERY CABLE

I began my cable odyssey with this aptly named cable when Ernie San Souci called me. 'I'm not a cable nut,' said Ernie excitedly, 'but I've got some cable I'm going to have sent to you from this guy, Joe DePhillips. Everybody loves it.' And apparently everybody does. The East Coast cognoscenti have been ordering it hand over fist.

Eschewing some of the wilder theories and exotic materials promoted by cable manufacturers, Joe DePhillips and co-designer Tim de Paravicini, have gone back to basics and produced an affordable cable ($250/meter with gold RCAs or XLRs) with excellent sound and spatial characteristics.

The cable is simply constructed and has very low capacitance—15 pf/foot. High cable capacitance can play a significant role in the sound of a cable, according to Joe and other manufacturers. It acts like a filter, filtering different frequencies in different amounts. The resulting sonic signature is what is then matched to the system by the buyer who attributes the sound of his cable to exotic designs and materials. Those things have their effects also, but Joe believes that ultra low capacitance is what is most desirable because it doesn't distort information.

Twin center conductors (7 strands each) are "cabled" or twisted to prevent crosstalk. Polyethylene is the dielectric. Joe found Teflon too harsh sounding. The center conductors are then wrapped in foil shielding and covered in a copper braid. In the balanced configuration of the cable, this becomes the ground. In the unbalanced configuration it is soldered to the negative terminal at the signal source. Discovery uses "plain old American mined copper" that also happens to be 99%+ pure. And that's it.

Prior to the conception of this survey and prior to receiving the other cables discussed here, I had inserted Discovery Cable into my system as a replacement for MIT 330. My first impression was that the highs were less grainy with Discovery. The MIT threw an impression of spaciousness which I have seen described as "phasey" (i.e., an expanded, mildly ill-defined soundstage). It's still good cable, but the Discovery threw a wider and deeper soundstage without sounding "phasey." It placed more solid, specific images across the front and rear of a rectangular soundstage, which filled the front third of my room.

With time, I began to attribute this to the Discovery cable delivering the harmonic structure of the instruments in a more complete, holographic manner. Notes are richer, better defined, with more space between the instruments. "Space-between-the-instruments" also allowed this cable to be one of the better ones at unraveling complex orchestral passages.

I began to appreciate this cable more and more. Highs are extended and well controlled. On the Freddie Hubbard [test recordings listed below], the closely miked cymbals were presented with the least "splash" or "spit." Bass is deep and extended, the mid-bass mercifully tight. The midrange is neutral, but there is a hair less of it compared to the Hovland, Cogan-Hall, or Kimber described below. That may contribute to Discovery's special quality of depth.

I think I notice the depth more than anything. With Mirage M1-si, a speaker that is slightly more forward relative to its predecessor the M-1, the Discovery Cable plunged the rear of the soundstage back to previous boundaries—namely, the fire escape. In dark, spacious recordings like the Fauré, images seem to recede in the distance forever.

Discovery proved to be an excellent match for the Blue Point cartridge, which has become very popular with the cost conscious. This is a lot to get from a modestly priced cable, and I know that for a lot of audiophiles this would be the absolute outside limit on spending capabilities. Indications: modestly dark to modestly bright systems. Contraindications: systems starved in the midrange.

COGAN-HALL *INTERMEZZO EM*

This cable uses hollow, high purity copper tubes, which run the length of the interconnect and serve as the conductors and connectors. This ingenious design maximizes the surface area over which the signal can travel without introducing the additional distortions which, according to the manufacturer, are introduced with wire stranding. Di-

ode effects, microphony, and time delay distortions are among these. Being all of one piece, colorations from connectors and solder are eliminated. The positive tube becomes the positive pin at the end of the interconnect and the two negative tubes (in the EM model) are molded to fit over the ground shell on the RCA jack. Because there is no wrap over the copper conductors, a theoretically ideal air dielectric is achieved. Nylon spacers are used every few inches to keep the conductors apart and away from the outer jacket, which appears to be a woven nylon material. All this keeps capacitance low—around 85 pf/meter.

This unshielded interconnect is large, oval shaped, stiff, heavy and needs to be molded into the proper shape to meet the jacks on your components prior to attempting to plug them in. This will avoid stressing and possibly damaging the jacks. They mold easily, remaining in the shape they are bent into. It's like working with a python with rigor mortis. Is it worthwhile?

In the past, the sound of many cables has fallen into two categories. "Forgiving" cables generally have had soft upper midrange to treble frequencies that make them accommodate a wide range of systems. Unfortunately they can also be "forgiving" in the bass regions, supplying loose midbass and little deep bass. Then we've had the "accurate" cables which, in most systems, "revealed" harsh high frequencies in recordings and sounded clinical, but had tight and transparent midbass.

Hovland *Sonic Purity* CD Cable

This is a specially designed interconnect intended for the run between the CD player (or processor) and the preamp. As the $96 (per 3' pair) price would indicate, this is not silver wire, as are the regular Hovland interconnects, but a low capacitance coax type, grounded at the preamp end. The same connectors with locking hex screws are retained from the standard silver plated model. It is intended to address the particular problems of digital music reproduction (read: treble harshness) and it does so very well at an economical price.

I used the cable with two passive boxes in place of a preamp, and with the Melos 333 line stage and ARC SP-9 preamps. Results were consistent regardless of the preamp used. Listening to the usual suspects, I found the bass on Sinatra's *Only The Lonely* to go deep, yet add no chestiness to the singer's voice. In the treble range, the strings on the Sinatra and on the Stéphane Grapelli were smooth—brought back slightly from the edge of brightness. A quick switch to Discovery cable revealed that the latter had more extended highs, but remember, we are dealing with a digital source. What is your source like? Are you satisfied with what commercial CDs sound like? No differences were noticed when I did a quick switch to the regular Hovland interconnect.

The midrange is rich, like the regular Hovland cable, and the stage is wide and deep. While all the top-of-the-line cables were out at Paul Lupie's house being auditioned for a second opinion, I used the Kimber Kable KC 1, a $68/meter OFC copper cable in my system. I felt this cable to be an exceptional bargain, but the Hovland, for $28 more, was more transparent and spacious.

If your CD source needs help and you have no plans to spend thousands on a processor and transport, this cable can be very useful.

Russell Novak

Well, Cogan-Hall splits the difference in the best possible way. In my system it delivered tight and deep bass with a wonderful midrange, yet supplied high frequencies in a "forgiving" way—just right for systems where the sound is verging on brightness in the upper mids, or where the highs are a little sizzly.

On Frank Sinatra's *Only The Lonely*, the singer's voice was delivered without chestiness on a wide, deep soundstage, with good placement and space around instruments. Sibilant voice sounds were more repressed than with most other cables. The effect was of a warm, natural sound without possibility of stress. There was a good spread of instruments from wall to wall across the front and rear of the stage, with depth and separation.

A very closely miked bass on Keith Jarrett's "Never Let Me Go" gives plenty of opportunity to woof yourself out of the room if your system is so inclined, but it didn't happen. Bass was deep and tight. The piano on this recording, and the clarinet and vibes on the Eddie Daniels/Gary Burton set, showed off a very smooth and dynamic midrange, one that caught all the overtones of these instruments. Very nice.

Turning to vinyl, I found all the same observations to be true. Highs were smooth and slightly subdued. Surface noise was reduced, but the upper treble came through almost undiminished. The triangle roll at the beginning of Bridges' *The Sea* was one such example. On my too-closely-miked cymbal test, Freddie Hubbard's *First Light*, the Cogan-Hall smoothed the "sssch" sound and made it intelligible.

The Cogan-Hall is a musical, involving cable—excellent in the bass and midrange, forgiving in the treble. Indications: neutral to bright systems where extra tightening is not needed in the bass region. Contraindications: systems already rolled in the treble range.

HOVLAND *PINCUS*

. . . like blueberries in sugared cream enjoyed on the front porch at twilight.

Hovland cable is silver plated copper, the amount of silver coating and the gauge of the strands having been carefully chosen to balance the sound. Bob Hovland informed me that silver/copper wires are gauge and coating sensitive, silver adding faster transients, copper carrying the "body" of the sound. There are four stranded conductors, all of the same gauge, per cable. He felt that multi-gauge strands smear the sound and so has avoided them.

The dielectric is Teflon with a tight fitting outer jacket to minimize resonances (the cable is flexible in spite of this) and it is unshielded. The RCA plugs are a thin nickel alloy. Bob feels it sounds better than gold and feels that massive plugs and jacks slow the signal. Over each RCA plug is an aluminum jacket with two tiny hex screws. One secures the jacket to the plug; the other applies pressure against the ground connection, locking it to the female jack of the component. Bob has a different philosophy than Joe DePhillips. He feels that capacitance need not necessarily be kept as low as possible (his comes in around 56 pf/foot), that other factors have to be considered. He clearly places greater weight on materials and configuration.

Hovland is the first of three silver cables we will be looking at and it has some special strong points. It is smooooooth. It has lots of midrange. It has lots of "darkness" between the instruments, lots of depth. Let me illustrate.

On Canteloube's "Bailéro," the normally whitish sounding strings are sweetened. Same with woodwinds. The

warm, smooth, creamy quality I have always admired in Kiri's voice is presented at it's best. It comes from a distant perspective without a hint of glare. On the Fauré *Requiem*, a recording with soft, reverberant characteristics, I heard romantic choral voices coming out of total blackness. The effect was startling, the apparent stage very deep.

On *Only The Lonely*, Sinatra's voice was slightly more chesty than usual. Sibilant sounds articulated close to the microphone are presented with less accentuation than with any other cable in the survey. Strings are smooth and extended, but less prominent than with the other cables. Do you have bright mini-monitors, a system needing midrange? These may be your cables.

Debussy's *La Mer*, normally a dry recording, was slightly sweetened and darkened, turning a dried up desert wash into a deep, watery, mystery. *Strictly For The Birds*, light, airy, and on the edge of brightness, was brought down a notch to achieve a more "normal" tonal balance. Results like this were repeated over and over again. Quick comparisons with Discovery Cable revealed that Hovland had slightly more midrange, slightly less treble.

Results were similar when Hovland was used as the phono lead. Hovland Cable controlled the too-closely miked cymbal "splash" on Freddie Hubbard's *First Light* very well, while still allowing detail to come through. Frank Bridge's *The Sea* was reproduced in the ultra smooth, slightly darker presentation I had come to associate with this cable.

Hovland AC Power Cord

Hovland did me a nice service here. They constructed their power cord massively and fitted it with Hubbell industrial grade plugs, thereby enabling it to be rated at 20 amps. This dovetails nicely with my Krell KSA 250, which draws 12 amps continuously and for which the manufacturer recommends a dedicated 20 amp circuit. It allows me to experiment with a power cord for the first time.

The power cord is constructed of three 10 gauge solid core, high purity copper wires. They are woven in a configuration that will, according to the manufacturer, minimize the back surge or power ripple back to the wall outlet, when the amplifier passes a sudden, powerful transient. The design is also optimized to reject RFI and EMI, and provide maximum energy transfer to the amp. The cord is stiff, but allows itself to be molded like clay. This is very handy for fixing the run of power cord *away from signal cables* and keeping it in place.

What did it sound like? First I thought I heard a reduction of grain compared with the stock cord, but it's not really that. There's no grain to speak of with the 250. It's more like a decrease in the background noise and an apparent improvement in the harmonic structure of the instruments—they seemed richer. I find that this kind of improvement can most easily be heard in solo piano recordings, which are wonderful for allowing you to fix on overtones and the silence between the notes. Keith Jarrett's *Köln Concert* (vinyl edition) did nicely, and confirmed my impressions from other recordings.

Caution must be taken when using power line filters with amplifiers as they can, and usually do, compress dynamics. Using a power cord like this on your amp and running it straight into the wall will allow you to treat your power source without the compromise in dynamics. At $289 for a six foot cord, it's a reasonable tweak for your system, and fills a niche for power service to an amp.

Russell Novak

Strings were sweet, surface noise de-emphasized. The laid-back, cushioned presentation with this recording reminded me of lying half awake in a mid-summer's daydream. Very nice indeed.

Let me not forget the midrange. Vibes, woodwinds, and piano were presented in a particularly pleasing way. The holographic qualities, the chromatic colors of these instruments, get through undiminished. There's lots of good midrange here.

Indications: systems neutral to bright in presentation; systems aimed toward a laid back sound, particularly on classical music; systems needing midrange. Contraindications: systems already on the dark side.

KIMBER KABLE *KCTG & KCAG*

This is a pure silver cable that is unshielded and braided, the wires continually crossing each other at an approximate 45 degree angle. The braiding tends to minimize EMI by breaking up the nodes created by the AC signal in your interconnects. The braiding also allows the wire to reject all or most RFI.

The KCAG consists of three stranded wires, two to the negative pin, one to the positive. Each "wire" is a small bundle of pure silver strands of varying gauges, wound in a proprietary configuration. The dielectric is mil spec, non-reactive Teflon. The KCTG doubles the number of wires in this configuration for slightly deeper bass at the expense of slightly higher distributed capacitance (both are already very low—lower than typical shielded, grounded cables). This is Ray Kimber's assault on the cost-no-object state of the art. The cables are flexible and pretty, a translucent white jacket allowing a glint of the silver to show through. Gold RCAs of course; other terminations available upon request.

This cable is the master of bass control and transparency. In my warm room, it provided an instant contrast to the rest of the cables. It goes very deep and is very tight with no "fog" or "bloom" to the sound. In fact this cable is transparent all the way up through the midrange, and out to a very extended treble.

No other cable provided the detail this cable did. This is not the grating, grainy, peaky sort of detail which has imitated true transparency in other products. No, the Kimber is smooth as silk in its presentation of detail. You get articulation without edge. In the Fauré *Requiem*, a dark, reverberant recording, the Kimber presented the individual choral voices more clearly than other cables, lighting the darkness.

Yet, on a recording that skirts the edge of brightness, Stephane Grappelli's *Strictly For The Birds*, the Kimber Kable did not push it over the line. Quite an accomplishment. This experience was repeated from recording to recording in the treble and down into the midrange, where Keith Jarrett's upper-mid piano notes never went glassy or shrill.

The total volume of the stage was as large as I have heard it in my room. Like the Discovery Cable, Kimber presented a (very) wide, deep, rectangular stage with the proper recordings. Sounds appeared from very exact locations and subtleties were well defined. This is a "live" cable with slightly more midrange than Discovery, slightly less than Hovland, and it had a slightly more forward presentation. On *La Mer*, a dry recording, the Kimber was able to avoid the worst effects, separate the orchestral sections well, and bring some life into the proceedings.

Dynamics are excellent. You can get fooled in trying to judge this because the Kimber also controls instrumental nasties very well. The "overmodulations" (for want of a better term) that are sometimes misheard as "dynamics"

are simply decoded better by the Kimber, due no doubt to its extreme bandwidth. "Effortless" describes this cable's ability to contrast sections of the orchestra.

After being somewhat disappointed with this cable's performance as a *phono* cable, I read in the literature that it was designed specifically for *line level* applications. This is not a bad thing. Since phono cartridges may sound different than your line level section, a special matching cable for that application may be desirable. *[Not surprising—the signal levels encountered in each are vastly different.—Tech editor]* Substituting one meter of Discovery Cable between the turntable and the preamp proved to be one of the most successful combinations *in my system.*

What of the differences between the KCAG (3 conductors) and KCTG (6 conductors) at $350 and $650/meter respectively? There aren't many that I could hear. Slightly more deep bass with the TG and that's about it. Jack King of Kimber thinks he likes the AG a little better in the mids and highs and for depth, but also told me he hasn't heard the TG that much in a variety of systems. So you could save yourself some unnecessary expense. Indications: neutral to dark sounding systems; those systems needing additional articulation; systems needing bass control and extension. Contraindications: systems already too bright. Match with a phono cable which enhances your cartridge.

MUSEATEX *CRYPTON* CABLE

Not to be confused with the Krypton cable (made of Kryptonite from the planet Krypton) which we will cover in the next issue, Crypton cable is cryogenically frozen to about minus 500–600° after it is assembled, and is shipped to you in a Styrofoam picnic basket to keep it from thawing. How you keep it frozen from that point on is your business, but for those few shining moments prior to thawing you will hear Nirvana. Users are advised to wear insulated gloves.

Well, the truth is Crypton Cable *is* frozen in liquid nitrogen, then slowly brought up to room temperature. Why you may ask? According to the manufacturer the freezing process changes the crystalline structure of the metal to a more tightly interlocking pattern and makes it a better conductor of the signal. I didn't have an untreated pair for comparison, but Museatex claims greater clarity, deeper soundstage, and more "air," but no change in the frequency balance.

I didn't have literature or prices on hand for this cable during audition, so I was kind of astounded by the price: $120/meter. That almost makes it an economy cable by the standards we've become accustomed to. Its utterly simple construction explains the reason. A twisted pair of solid core, 24 gauge wires form the positive and negative conductors for the cable. The dielectric is polyethylene. It is shielded and grounded at the receiving end of the signal, and that's it except for the gold RCAs. It's the cryogenic freezing that adds the cost to this cable.

I think I underrated this cable in my listening sessions because, in going over my notes, I can't really find anything wrong (and that was before I knew the price). That makes it difficult to describe, and consequently I spent less time listening for effects. That's good for you and bad for me. I have less to say; you have an accurate cable.

It passed the voice test with Frank and Kiri with accurate frequency balance. No aspect of the voices was exaggerated, neither the sibilants nor Frank's chest (or Kiri's either). Bass was tight and extended with as much control as anything except the Kimber Kable. The midrange was all there. Highs were smooth and extended—

nothing undesirable was added to the marginal recordings.

I got a large rectangular soundstage, with good spread front and rear. A quick switch back to Discovery revealed a close match, with the latter showing some advantage in this area. Space between instruments was also good, but that space seemed more compressed and filled compared to Discovery. Dynamics seem a little restrained.

What this cable excels in is complete octave-to-octave accuracy, and after that I don't think I have much else to add. It's a conservative sounding cable and the least expensive in our survey. Keep away from heat to prevent thawing. Indications: anything.

By the way, quite to my surprise, the very nice chap I spoke with at Museatex, Gregory Soo, said they would cryogenically freeze other wires for a fee, and said the process works with everything they've tried it with. Call for details.

MUSIC METRE *SILVER*

Jim Patrick is really a very patient man. Way back in January or before, he submitted a box of cables for us to review. The staff member who received them resigned from the magazine and saw fit not to return them immediately—to us or to him. By the time they found their way to my house it was late March, too late for issue two. The poor man won't see anything in print until the fall. It'll be worth the wait.

Jim also needs a philosophy to sell his stuff. When I asked him about his design rationale, he told me he thought most of the explanations out there were "backfill and bullshit." He told me that he arrived at the current configurations of his products by trial and error, the use of the purest possible metals, and as little dielectric as possible. (No good, Jim. Now get to work on your story about the Old Indian in the desert; listening in harmony with nature and all that.)

This is excellent cable. Music Meter Silver, like the Kimber Kable, is made of pure silver conductors. Unlike the Kimber Kable, Music Metre is made from 12 solid conductors running in parallel down its length. It is very flexible, somewhat flat in shape and covered in a handsome white nylon type of material. The silver Cardas RCAs he uses have a tight shrink wrap covering the junction between the cable and the plug. I believe this cable will need a longer time to break-in, with a musical signal running through it, than other cables. I observed greater coherence and smoothness in the later listening sessions than in the initial ones. Hook it up to the CD player with a wide range, dynamic CD, hit the repeat button, and let it cook for a week.

An earlier edition of MM Silver used 8 strands of silver and had a gray jacket. I found it good in most respects, but a little too "splashy" in the treble for my tastes. The white jacket version addresses this problem nicely, making the cable one of the best in decoding the closely miked, forwardly placed cymbal on Freddie Hubbard's *First Light*. The treble region of this cable is slightly highlighted, transparent and extended without being harsh or overly etched. Is this a characteristic of the new generation of pure silver cables? On Frank Bridge's *The Sea* you definitely catch the sun's glint off the waves. The rear rows of the orchestra could be heard more clearly—lit up, so to speak, as with the Kimber Kable.

The midrange is rounded and immediate. Piano, vibes, woodwinds had coherent overtone structure. My acoustically dry *La Mer* recording was well presented, with no exaggeration of this deficit. The psycho/acoustical presenta-

tion is a little more forward than Discovery or Kimber, the "front row" of most recordings coming to about 4" in back of the speaker face, compared to about a foot to the rear for Discovery.

The cable controls the mid-bass very well (another characteristic of silver cable?) and goes deep when asked to. There was no chestiness in Sinatra's voice, yet I got all the appropriate floor shaking with the Dorian recording of the *Goldberg Variations* transcribed for organ.

Total volume of the soundstage was as large as any of the other cables, separation between instruments excellent; width and depth extended into the rear corners of the room.

My tendency was to return to Discovery Cable to use as the best match for a phono interconnect *with my cartridge*. From the upper midrange through the

Kimber Kable *Postmaster* Spade Connectors

You know how it is when you know something intellectually and then you actually *experience* it? After I switched to Ocos speaker wire last winter, I listened for quite some time, mostly out of laziness, before I terminated the Ocos connectors properly with spades lugs. Bare wires were simply pushed through the holes on the five-ways and the knobs screwed down. This method has its proponents—one less solder connection means closer adherence to the theoretical straight wire approach. But I knew that proper contact was not being made with the speaker's binding posts, and in the back of my mind I knew I was ignoring one of the fundamentals of our hobby: solid electrical connections.

When Kimber Kable offered to send me some of their new Postmasters, I jumped at the chance. First, almost all other spades I had investigated were only available with the standard .25" spacing between the prongs, not sufficient for the thicker posts on my original set of Mirage M-1s. Kimber had them available in the .33" stud size, and both sizes are available in either gold plated or pure copper finishes. I got the pure copper .33" spades and soldered them to the bare wire terminations of the Ocos connectors. Metal flaps are crimped over the bare wire before soldering to provide a good mechanical connection. Another set of flaps is crimped over the insulated wire for stress relief, providing protection against stripping while handling. Pieces of heat shrink tubing come with the set to cover the bare wire/solder joint and give a nice finished appearance.

The Postmasters have four ridges, two on each prong of the spade. Each spade is slit laterally and a thin silicone wafer is slid in. These two design features allow a gas tight connection to be made with only "finger tightening" on the binding posts.

How did they sound? I hate to be obvious, but they were great! Subjectively, bass seemed to go 50% deeper and sounded twice as tight. After a break-in period (remember this is a new connection and a new conductor for the signal) the midrange seemed more relaxed and the highs smoother. Of course, it was not possible to go back and forth: spades/no spades. But I'm confident in my observations of this non-subtle result.

Would any spade lug do as well? Well, I'm not going to start A/B-ing spades lugs in the middle of a wire survey (the booby hatch for you, Novak), but these worked really well and were easy to work with during assembly. $20/pr.

Russell Novak

treble, Music Meter Silver is slightly more prominent than average and could probably be profitably associated with say, a Koetsu.

Indications: neutral to dark sounding systems; systems needing detail, tight bass, and extended highs. Contraindications: systems where brightness is already a factor. Jim Patrick informs me that he is evaluating some new RCAs that will be somewhat more forgiving in the highs for use in slightly bright systems, and can terminate with these upon request.

The test recordings:

1) Bach: *Goldberg Variations* (transcribed for organ); Jean Guillou; Dorian DOR 90110

2) Fauré: *Requiem*; Sir Colin Davis; Phillips 412 743-2

3) Frank Sinatra: *Only The Lonely*; Capitol CDP 7 48471 2

4) Canteloube: *Chants d'Auvergne*; Kiri te Kanawa, soprano; London 410 004-2

5) Debussy: *La Mer*; Charles Dutoit; London 430 240-2

6) Eddie Daniels & Gary Burton: *Benny Rides Again*; GRP GRD-9665

7) Stéphane Grapelli & Yehudi Menuhin: *Strictly For The Birds*; EMI Classics For Pleasure CD-CFP 4549

8) Keith Jarrett: *Standards, Vol. 2*; ECM 825 015-2

9) Geoffrey Burgon: *Cathedral Music*; Choir of Chichester Cathedral; Hyperion CDA 66123

10) Freddie Hubbard: *First Light*; CTI (vinyl) CTI6013

11) Jimmy Smith: *The Cat*; Verve (vinyl) V-6 8587

12) Frank Bridge: *The Sea*; Sir Charles Groves; EMI (vinyl) ASD 3190

13) Gustav Mahler: Symphony No. 2; Otto Klemperer; EMI (vinyl) SLS 806

14) Robert Shaw Chorale: *Deep River*; RCA (vinyl) LSC 2247

The reference system: Mirage M-1 and M-1si speakers; Ocos speaker cable, parallel wired; Krell KSA-250 amp with Hovland AC power cord;

Cogan-Hall Instruments, Inc., 3620 Tarpis Ave. #8, Cincinnati, Ohio 45208; 513-321-9666; Intermezzo EM interconnect $370/meter.

Discovery Cable Company (Joe DePhillips, President), 28 Beardslee Road, Millstone, New Jersey 08876; 908-359-2485; Discovery interconnect $250/meter.

Hovland Company (Bob Hovland, President); distribution through Beckman Audio Marketing (Ken Beckman, President), Star Route Box 685, 1125 Lion Court, Frazier Park, CA 93225; 805-245-1685; interconnect $190/3 ft pair.

Kimber Kable (Ray Kimber, President), 2752 South 1900 West, Ogden, Utah 84401; 801-621-5530; KCAG interconnect $350/meter, KCTG interconnect $600/meter.

Museatex Audio, Inc. (Kurien Jacob, President), 1829-54th Street S.E., Calgary, Canada T2B 1N5; 403-273-2552, FAX 403 272-3860; Crypton interconnect $120/meter.

Music Metre (Jim Patrick), 249 N. Brand Blvd. Suite 701; Glendale, CA 91230; 818-242-4535, FAX 818-242-4415; Music Metre Silver interconnect $400/meter.

passive preamp (matching resistor), Purest Sound Systems passive preamp, Melos 333 line and phono stage preamp; VPI W 19 MK II turntable, Well Tempered Arm; Sumiko Blue Point cartridge, Signet AT-OC9 cartridge; Musical Concepts modified CD player; Monarchy Audio dual 20 bit D/A converter; Bright Star Audio isolation system—Little Rock and Big Foot on each component.

Our thanks to The Cable Company. For information on auditioning cables in your home, phone 1-800-FAT-WYRE.

Four Economy Cables

Russell Novak

Two manufacturers were kind enough to offer some mid-price and economy cables for review and I, in my naïveté over the amount of work involved, said yes. So this is going to be brief. I'm in the stretch, almost finished, and the huge gobs of spaghetti strands which were strung over my CD rack in the "unlistened to" pile are almost gone. I'm breathing easier now.

I hope you don't want me to lie to you. I can't tell you that we have in this group a cable that sounds as good as something selling for many times the price. However, there are values here for audiophiles *who can't afford* very expensive cables, yet don't want to introduce obvious colorations.

Kimber Kable KC 1: This cable packs an awful lot of value into a $68/meter pair. It sports oxygen-free copper conductors of different gauges with a Teflon dielectric surrounded by a copper braid and drain wire that draws RFI to ground. Gold RCAs complete the package. The cables are directional and meant to be grounded at the preamp. The arrows on the cable point *to the preamp* and run *with* the signal flow when connected to a signal source, but when connected between the preamp and amp the arrows would run *against* the signal flow, pointing back to the preamp.

This cable does nothing obviously wrong. It is less transparent than the best cables, is less extended in the treble region, but it is balanced and musical. The bass goes deep enough (you have to spend much more to get really three dimensional deep bass), is slightly warm, but is not too loose. The midrange is natural, the soundstage less wide and defined at the edges of the room, but you won't notice this unless you've been exposed to better.

If you are a new audiophile and would rather use your limited budget to buy components and not cables, you can feel safe knowing these cables will not cover up mistakes in your system that would be revealed later after upgrading. They give you a diminished view of the ultimate, not a skewed view. Established audiophiles can save a lot of money using these on non-critical components such as cassette decks and tuners.

Music Metre II: At $78/meter pair this cable competes directly in price with the KC 1. It is a shielded, directional ca-

ble, grounded at the receiving end of the signal. Multi-gauge OFC copper wires, three per leg, with a Teflon dielectric are wound around a central core. The same Cardas RCAs used in the higher priced lines are used here.

I was less than enthusiastic about this cable. Its primary deficit is its lack of transparency. It is more opaque sounding; the highs are slightly more rolled than the Kimber and it adds a slight stridency in the upper mids, which I noticed on the already marginally bright Grappelli recording. Bass presentation and stage size are good, but we have lost a measure of sound with these cables that we don't need to. Designer Jim Patrick feels the lack of transparency is due to the changed characteristics that shielding adds to cables.

Music Meter Calibre: This is the next step up in the Music Metre line, at $115/meter pair. Fourteen 30 gauge OFC copper conductors, 7 per leg, are wrapped around a solid clear plastic core. The cables are non-directional (unshielded) and the dielectric is Teflon. RCAs are Cardas silver.

Living in Brooklyn, I certainly should have heard an increase in the RFI hash an unshielded cable would make me susceptible to, but that was not the case with any of the unshielded cables in this survey—and it is true with this one. Improvements ran across the board in favor of the Calibre compared with the preceding cable.

It was more naturally balanced with a pleasing midrange, and the upper midrange stridency was gone. It was much more transparent than the MM II and a tad more transparent than the Kimber. Mid bass was tighter (no chestiness noted from Frank) and the soundstage began to widen at the front to just outside the speakers. The soundstage was deeper on the Fauré recording than with the Kimber.

Where the Kimber may be the most economical of the recommended cables in this survey, the Calibre may achieve the best price/performance ratio in that, for a $45 increase in price, it begins to develop a transparent soundstage without committing frequency balance errors.

Music Metre Signature: At $175/meter pair, this cable is constructed exactly like the top-of-the-line MM Silver cable, except that OFC copper wires of a slightly larger gauge are used as the conductors instead of the pure silver. The cables are non-directional and the dielectric is Teflon. Cardas silver RCAs are again used here.

I listened to this cable last and I should have listened to it much earlier—like while I was doing the top-of-the-line cable for the feature article. All the top cables were out at my co-editor's house for his comments, so I couldn't make direct comparisons, but I believe this is a top contender. At $175 it is not really an economy cable, although it does represent excellent value.

You get: deep, transparent, tight, dimensional bass; a soundstage that is wider and deeper and gives a more holographic presentation to and space in between the instruments; a natural, musical midrange; a treble range that is much more extended than the cheaper models, yet has a more conventional balance than the Music Metre Silver in that the extra sparkle and extension of the Silver is understated with the Signature. You will recall that my recommendation for the use of the Silver cable was in systems neutral to dark in overall balance. The Signature can be recommended for systems that are neutral to slightly bright.

The Signature *seems* to have as much detail, articulation, and overall coherence as the Silver without the highlighting effect the Silver has. You would be foolish not to listen to both in your system prior to purchase.

Two Speaker Cables: Hovland and Music Metre

Russell Novak

It's just amazing how closely the sound of the speaker wire from these two companies replicates the sound of their interconnects. I guess that *shouldn't* be amazing, since the same sets of ears and tastes guide the decision making process in the development of both products for each company. Still, the end-user must bear in mind that the characteristics each wire possesses will be intensified with the use of both the interconnect and speaker wire. One should listen to one without the other before deciding to go for both.

The reference speaker cable in my system is Ocos, run in a parallel wired configuration to the Mirage M-1si speakers, as per the recommendation of John Hunter at Sumiko. Please see Anthony H. Cordesman's review of this cable in issue 74 of *The Absolute Sound* (Nov/Dec 1991). I find it has control and transparency throughout the frequency range, and seems to preserve more richness in the harmonics than most other wire.

The Hovland speaker wire, like the interconnect, is made from a twisted pair of stranded, silver plated copper wire, hand-made, terminating with gold contacts of your choice. This was run in a bi-wired configuration from my Krell KSA 250 to the Mirage M-1si speakers. Other associated components are the same as in the interconnect survey.

On Stéphane Grapelli's *Strictly For The Birds*, Canteloube's *Chants d'Auvergne*, and Debussy's *La Mer*, the strings were sweetened and the spaces between them darkened. The drummer's brushes on the snare drum and cymbal were recessed compared to the Ocos cable. Kiri's voice became extra smooth. The mid-bass was well controlled on the Keith Jarrett and on the Sinatra, which had no extra chestiness. Sibilants close to the mike were repressed. Switching to vinyl, I found surface noise de-emphasized and the strings on Bridges *The Sea* were again sweet, with lots of darkness between them. With this cable the two "sea selections" had deep, mercurial waters.

On Faure's *Requiem*—already a soft, reverberant recording—the darkness was too much. I felt I was losing some midrange information and a bit of dynamics. This would not be the case if installed in a system with a brightish sound.

In my system, which has no tendency toward brightness, this cable was too dark, especially when both the interconnect and speaker wire were used together. However, I have heard many systems that would demand both. Indications: neutral to bright systems.

Music Metre Silver speaker cable is constructed much like the interconnect. Parallel, solid core silver wire, six strands worth, run the length of the + and - legs (which are physically separate) for each channel. The dielectric is Teflon.

Music Metre speaker cable, like the Hovland, takes the characteristics of the interconnect and reinforces them. You should determine the needs of your system before installing both.

With each recording, bass control took on a well controlled, tight aspect, and the treble range, while lacking graininess, was accentuated slightly. It lit dark recordings, yet failed to become obviously bright on bright recordings. The two "sea recordings" give us, like the interconnect, waves with a glint of sunlight. Midrange and dynamics are in Technicolor, the stage somewhat forward and very wide. Indications: neutral to dark systems.

One listener complained of a "digititis" affect with this cable. The substitution of my reference Ocos cable eliminated the complaint, proving that it is the best match for my system. With no other cable have I had the sense of harmonic completeness—the ability to deliver both the fundamental and its harmonics. It makes the notes seem more "whole."

Live From The Audiophile Society

Unity Audio, Bob Grost
Theta Digital, Mike Moffat
November, 1991
Reporter: Bob Serino

After Hy's opening joke and Arnie Balgalvis' report from the Executive Committee meeting, Myles Astor informed the gathering of his plans for the first issue of our new quarterly publication. According to Myles, the magazine would contain 180 pages and promises to include numerous special features along with music and equipment reviews.

The print run will be 10,000 copies, and over 9000 are already committed to members, subscribers worldwide, and the upcoming Consumer Electronics Show in Las Vegas. Richie Fugetta was given credit for his design of *The Audiophile Voice* logo and the creation of the first cover, a blow up of which was shown to the membership.

Membership of the executive committee stressed that although professionally done, the magazine is not an attempt to compete with existing publications; rather, it aims to be something different: an outlet for the insights of a community of music lovers and audiophiles.

The initial phase of our meeting was ended with a moment of silent reflection upon the passing of one of our long time members, Barney Pisha.

After the break, Bob Gross of Unity Audio gave us a brief presentation of his new Parm speaker system, which was about to become Hy's new reference speaker. Unity Audio is a company that starts its design approach from what it believes the human ear needs to hear to recreate the experience of a live acoustic event.

The Parm system is a four piece subwoofer/satellite configuration. The subwoofer operates with a compact 17 liters of internal volume, yet can produce bass that is only 3dB down at 19Hz, and is 96 dB efficient at 1 watt/1meter. The structurally sound Fountainhead cabinets reduce resonances, and within each enclosure two woofer cones operate in a push/push type arrangement. The drivers therefore see an infinitely large enclosure, enabling Unity to achieve impressive bass extension in a physically small unit.

The woofers fire downward into the floor, ensuring that the woofer's first reflective boundary is known. The woofer unit is then placed a required distance from the wall, thus ensuring that the second reflective boundary is also known. Essentially, this design enables the woofers to effectively "carry their own room" with them in any listening environment.

The speaker system uses a fully balanced electronic crossover and dynamic drivers that are designed to launch all acoustic frequencies in a flat plane, much as planar designs do. The Parm system including crossover retails for $15,000.

Mike Moffat of Theta Digital was then introduced. Mike Moffat was first exposed to digital electronics in 1973 while working for a subsidiary of Texas Instruments. The application was an odd one: Oil exploration teams were finding that the analog tape recorders used in recording underground vibrations were too noisy.

Mike described himself as a hi-fi junkie who spent far too much money on the hobby. Mike's first commercial Theta pre-amp was introduced in 1977 and made quite a few waves in the high-end community. Soon he sold his half of Theta and began selling accessories, ultimately moving to Japan. Despite making a good living, Mike found himself somewhat unhappy with his life and moved back to the United States in 1983, bringing with him a first generation CD player.

He opened an office, hooked up this CD player and couldn't believe how awful "perfect sound forever" could be. Within a week he was working on ways to improve the sound of digital playback. In 1986 he introduced his first processor, and with analog as his reference has continued to build on its strengths in subsequent generations of processors.

Theta processors use what is called "DSP," or digital signal processing. All algorithms used in signal processing were written between 1915 and 1960. The Japanese and the Philips corporation use a variation of an algorithm written in 1959, the rationale perhaps being that what is the latest must be the greatest. Theta prefers to use a combination of two algorithms, one written in 1918, the other in 1939. Both were written by researchers at Bell Labs. (By the way, Mike feels that the breakup of Ma Bell has been a major loss to us, as much of the technology in audio and telecommunications came from its research.)

Theta has recently introduced its first CD transport. The unit uses a heavy duty laser disc transport, which Mike found superior to any CD-only transports that he could find.

Theta believes in multi-bit technology, but feels that in time single bit will be forced down our throats because the big players, for reasons other than sound, are moving down that path.

While still a believer in analog, Mike feels there are aspects of digital which are now superior, and that as long as there are companies that really care about digital playback, the format will continue to advance. The record side of digital, however, still needs much improvement. In addition, the state of the art in A to D converters lags that of D to A converters by several generations.

Mike discussed a recent trip to Japan in which he heard many examples of older recording technologies. His observations were that every time we have taken a technological step forward we have also lost some positives present in older technologies. Fortunately, he believes there is hope, as digital audio is very much in its infancy.

Cello, Mark Levinson
December 1991
Reporter: John Vogt

Mark Levinson opened his lecture by posing this question to the Society: "Do most of you have the experience that recordings, both digital and analog, differ greatly in quality?" The response was, of course, a strong Yes. He then asked further, "Why do you think that is?" A variety of reasons were put forth: different halls, mikes, electronics, recording engineers, weather. Mark, on the other hand, felt that the overwhelming reason is due to differences in tonal balance among the various studio monitors.

A typical studio set up would include a Crown Amplifier connected via zip cord to Yamaha NS-10's. The mixer's job would be to make this sound as natural as possible with the tools at his or her disposal. The primary tool is equalization. The system itself would be characterized as sounding bright

and somewhat bass shy; therefore the low end would naturally be equalized upward and the top end reduced. On a neutral system the resultant sound would be dull and boomy. This equalization is typically on the order of 15dB overall. To further complicate matters, additional equalization may be required to compensate for the microphones and the recording venue. Mark felt that most people were not willing to admit that EQ is required because, until now, they had no way of implementing it in a high-end system.

Cello's first product, The Audio Palette, became established as the first sonically transparent equalizer made to correct tonal imbalances in recordings. There was only one problem: it was too expensive for most people to afford. In an effort to make Cello products available to a wider audience, they have developed the Palette Preamp. This product combines both a preamp and equalizer in one chassis, with a price far less than the original Palette alone.

The new preamp accomplishes most of what Cello's top product does.

Mark brought along a Palette Preamp and proceeded to demonstrate the new preamp's capabilities by playing various selections (using a DAT source) and having various club members come up and adjust the tonal balances. Initially Mark switched the EQ out on the preamp so that everyone could get a fix on the system's sound—and that of the preamp in particular. The first selection played was a cut from Michael Hedges album *Aerial Boundaries*, and after that a selection from a vocal group. The consensus was that the system sounded very good, with the preamp in particular sounding very neutral.

Mark then had Russ get up to man the controls while a selection from Dick Hyman's album on Reference Recordings was played. Russ felt the top end was too soft and the bass slightly weak. To get an idea of how the EQ worked, Mark had Russ turn the 20k control to both extremes. After trying this, Russ quickly settled on +4dB at 20k and +1.5dB at 5k. This agreed closely (within 1.5dB) with the settings Mark preferred for this selection. The EQ imparted a more upfront, "you are there" quality to a somewhat muted or distant recording. Mark was quick to point out that the recording itself probably sounded correct on the location monitors used; it had been tailored for that system.

A track with Ella Fitzgerald and Louie Armstrong followed, and required only some bass reduction. The Modern Jazz Quartet with Sonny Rollins was next, and Terry was volunteered to play engineer. This recording needed serious help, as the midrange was grossly emphasized. The boost amounted to 10dB at the bottom end and 15dB at the top.

With this amount of boost applied, you would normally have a major change in overall volume level. However, the Palette Preamp has input level controls to compensate for this. The level was then adjusted to compensate for the equalization and an A/B comparison was then able to be made. The difference between the two was quite dramatic, with the EQ'd version sounding light years ahead. Other recordings played exhibited different tonal problems, and the Palette Preamp did an excellent job of making them enjoyable, if not perfect.

A question was raised about the Palette's ability to improve orchestral recordings, as everything that had been played so far was either small groups or solo voice. Mark indicated that classical recordings fall into three groups: those that are fine as is (relatively rare); those that were EQ'd for a particular system, but not yours; and those in which each instrument has been EQ'd, with some instruments very highlighted. The second kind can be re-

stored fully without much difficulty. However, with the third kind you would only have a limited amount of success, due to the Palette's equalization affecting all instruments in a given frequency range.

Mark went on to explain that Cello's marketing philosophy had recently changed: In order to complement Cello's introduction of more affordable components, these products are now being sold through a select number of high-end dealers. The more "high-end" Cello products will continue to be offered exclusively through the Cello showrooms in Los Angeles and New York.

Cello has recently introduced five additional products besides the Palette Preamp. Joining the top of the line Performance II are the Duet 350 amplifier followed by the Encore power amplifier. The Duet is 350 watts and sells for $7,500, while the Encore amplifier comes in at $6,000, the same price as the Palette Preamp. Cello now has the Stradivari speaker line, which is comprised of three models: the Premier is the entry level speaker at $10,000; next up is the Master at $25,000; and at the top is the Grand Master at $40,000. All three speakers share the same drivers, crossovers and wire, but differ in the quantity of drivers contained in each model.

Overall, the Palette Preamp is an affordable product that can do a superb job of enabling the listener to enjoy the vast majority of his music collection—even though a good percentage of that collection may have been unlistenable in the past.

Valve Amplification Company,
Kevin Hayes
February, 1992
Reporter: Irwin Elkins

BUSINESS MEETING

Arnie Balgavis discussed upcoming programs for the Society, while Hy Kachalsky presided over one of his last meetings—pace, dearest friend. The Executive Committee report included news that the second issue of the magazine was almost finished—despite an editorial staff reorganization. Clearly Hy continued to be the driving force behind the success of our magazine, and we will never forget his untiring, inspirational presence.

Under audiophile experiences, one of our members praised his car audio system as one of the best sounding systems he has heard: JVC CD player and Volkswagen speakers. More seriously, mention was made of an excellent system using Krell 500W amps, Unity Pyramid speakers, and a Vimak processor/preamp—a real gem! Next month will bring more information on the Vimak.

Arnie told of a fascinating visit to the Krell factory. He described the production lines for the PC boards, as well as his visit to Dan D'Agostino's home to hear the new MD-10's in an ideal sound environment. The equipment included Apogee Divas and four Audio Standard amps. Can you imagine the emotional gratification of seeing a whole conga line of multi-thousand dollar amps lined up on a production line? All the more power to you Dan, for giving us products of tremendous audio quality.

One member shared his pleasure with the SONY 999 headphones, describing them as having more presence and realistic sound than the Grados or AKGs.

A fine point was raised regarding a live concert with the Northern Sinfonia. The sound of the strings was extraordinary. Often, listeners go to concerts with preconceived notions of "live sound." As we seek the Holy Grail of sound we

have to relinquish our notions of what the orchestra should sound like. We need to refresh our musical palettes every so often to return to the real world of music. Hy concurred with his reminiscences of a concert with the young violinist Uchido, and another member recalled the excellent sound at a recent appearance of the St. Louis Symphony under Leonard Slotkin in Carnegie Hall.

Arnie reported on the new half-speed mastered Reference Recordings CDs. These will be released on carefully produced LP's. Also, he reported on a recent visit to the AES show where he learned some very interesting facts about the basic polar radiation patterns of musical instruments. He pointed out that we don't usually hear the real sound of an instrument if the microphone is placed right at the opening; many frequencies spread out and the natural harmonics are not picked up by such close miking.

Another interesting development was the work done by a company in Rochester, New York, to build speakers whose cabinets are tuned to intentionally resonate rather than be inert. BSL is developing the concept; the question was raised as to how this computer technology can be free of coloration produced by these tacked-on resonances. Combak is also working with this resonance control. The results are still inconclusive.

A discussion of analog vs.. digital sound—so what else is new?—led to a break before our program.

PROGRAM

Kevin began his excellent presentation with a review of some of the thinking behind the perennial controversy over tubes vs. transistors. Both technologies have been around for many years, so there are no more surprises, but improvements are coming in the areas of power supplies, resistors, capacitors, wires, jacks and chassis resonance control. While tubes in general may be more distortion-prone, people *like* the sound even with the distortion! In some ways, however, the tube may be more accurate than the transistor; the vacuum itself is probably the best dielectric going. Also, transistor circuits tend to be more complex than tube circuits, and simple circuits sound better.

We are now in the middle of a renaissance in the tube industry. Kevin mentioned that VAC is the importer of Golden Dragon tubes from the British PM Company. Made in China, the new EL-34's running the PAC 90 monoblocks last up to 10,000 hours. They have 5% more power and 50% less distortion than the older Golden Dragon tubes.

In response to the question of accuracy vs.. musicality, Kevin stated that when developing components, compromise is important, and the evaluation process takes months. One has to use a variety of speakers for use in a new circuit design. Also, irregular transient conditions will confuse the results. Big differences can occur over the last $^{1}/3$ of a dB in an amplifier circuit, and the ear is the most important measuring instrument.

Kevin emphasized that he doesn't deal in tweaky esoteric tubes—only with those available universally. He uses the 12AT7's in his cascade circuits.

Newer developments will revolve around newer tubes: the PX4, PX25, KT 77, RA4 rectifier tubes, the GC 34, etc. Kevin uses the 12AU7 for his phase splitters because he likes to use common tubes as a service to audiophiles. He doesn't much like GE tubes because of a somewhat harsh sound. The 6L6, he finds, has a lot of bass energy, but a muffled mid-range and poor top.

The VAC power amplifier has regulated power sections, and is a sturdy, modular unit with all mechanical parts isolated from vibration. There are two high voltage transformers, and every triode has its own independently coupled storage supply. Newer products include a DA converter and a pre-amplifier with phono stage, six line inputs, individual volume controls, and a stereo/mute/mono switch (a blessing for old records). Everything is point-to-point hand wiring.

The DA Converter is updateable, using a computing program microprocessor. It is a dual-differential, cross-referenced one-bit implementation of a Philips design, with jitter down to practically zero. The analog stage is pure tube, and it provides for all common sampling rates. It has no fancy LED readouts, but does have a tube DC indicator of classic beauty. It's a fun unit.

After talking about some evolutionary changes in his company with updated versions of the pre-amp and amp, Kevin turned the equipment over for our listening pleasure. It was a revelation to hear the transparency, expanded sound stage, and warmth in the musical sound—a real sonic treat. We look forward with great pleasure to hear more from this dynamic company and its forward-looking designer, Kevin Hayes.

Vimak Corporation
Michael A. Koulopoulos
Russell A. Siggelkoe
Len Schneider
March, 1992
Reporter: Ron Carlen

This meeting represented the end of an era for The Audiophile Society. Despite Hy Kachalsky's worsening battle against cancer, he found the strength to preside over the meeting. Sadly, Hy passed away three days later. The Audiophile Society has held most of its meetings in Hy's home since it was founded. With Hy's passing, our future meetings will be relocated primarily to Leon Yorburg's home. Hy's wonderful hospitality will be sorely missed.

Vimak Corporation was invited to make a presentation this evening. Vimak is a new company that currently produces a D to A converter/preamplifier and a stand alone converter. Arnis Balgalvis introduced Len Schneider, the National Marketing Manager of Vimak. Len explained that the name Vimak was derived from the president's initials (Michael A. Koulopoulos). Michael put the company together several years ago while Russell Siggelkoe, the Project Engineer, did most of the design work.

Len introduced Michael Koulopoulos to give a presentation of their feature product, the Model DS-2000 Converter/Preamplifier. Michael explained the goals he had when establishing Vimak. These included: producing a consumer product with the ultimate sonic performance; perceiving what the consumer would want in a product in the next three to five years and building it into the product today; being very conscious of the ergonomics of the product; and making it extremely friendly to the user, with an attractive appearance.

Michael believes they have accomplished these goals in the DS-2000. He is also proud of the fact that their products are entirely made within the U.S. The unit is a D/A converter with a built-in preamplifier that operates in the digital domain. The first unit was developed in plastic and completed in December 1990, only nine months after Michael started the company. In March 1991 the first prototype was operational. In June 1991 three units were completed and shown at the Chicago

CES. They began shipping production units at the end of July.

It has a unique, high tech appearance; tremendous effort has been made in the finish of the unit. The entire front section is one piece of extruded aluminum. The sides are also made from extruded aluminum. The top and bottom are solid aluminum, 1/4 inch thick weighing 7 1/2 lbs. each. Once the machining is completed, Vimak copper plates the aluminum, then a clear coating is applied to protect the copper. Finally, the paint is applied—between six and eight coats of paint are applied to each unit. They chose to use paint instead of anodizing to give the user the option of matching the rest of the equipment in the system (the unit is available in different finishes).

They wanted to keep the controls to a minimum to maintain user friendliness. The layout thought out to the last detail. For example, the keypad on the front panel is angled up at 10.5 degrees to match the angle of the human hand.

The unit has five source inputs on the back. The outputs include two unbalanced and two balanced XLR connections with selectable gain. The DS-2000 also has a digital output that allows the user to make a digital recording. The unit has a door on the front covering an additional RCA input and an optical input, for temporary connections without having to undo connections on the back. There is also a headphone jack with a built in headphone amplifier.

The interior of the unit is well isolated, with separate power supplies for the digital and analog circuitry. The unit can be plugged into various voltages (100, 120, 220, 240) by just making an adjustment on the back. The digital circuitry is completely isolated from the analog circuitry, and the connections between these two are done through opto-couplers to minimize the effect of noise between the two sections.

The unit can be used as a D/A converter with a user's existing preamplifier. The user selects the fixed gain using the volume control to match the input of the preamplifier, and then locks it in by pushing the fixed-gain switch. This defeats the volume control on the front of the unit.

The DS-2000 uses an 18 bit processor with 128 times oversampling, and the implementation is unique; Vimak uses only components of their own design (except for the Motorola 56001 processor). They use their own proprietary delta-sigma modulator.

To more easily accommodate future updates, the units have been designed and constructed in modular form. Upgrades will involve merely swapping these modules. The modular construction also allows for quick repairs. The unit can be completely taken apart in about seven minutes. The circuit boards slide in to the side of the unit and securely snap in. This holds them much firmer than most units.

To allow for multi-room systems and the ability to play from one unit to another, they have included two ports on the back of the unit (referred to as automation). Besides the remote control function, these automation ports provide the ability to test the unit by remote means. Vimak has the ability to troubleshoot most problems over the telephone through these ports. They can also download revisions and software enhancements over the telephone.

Every unit has an identification number, allowing one main DS-2000 to communicate with up to 128 combinations of systems within one house. It can address any other unit by I.D. number and instruct it to change sources or to do certain other things. The unit can be configured to control or be controlled by a variety of devices, including a personal computer via the standard RS-232 and RS-485 communication hardware

included within. Additional features will probably be accessible through the automation port.

The DS-2000 also comes with a wireless remote control that duplicates the front panel. Accordingly, the unit can be accessed from three different points: the front panel, the hand-held remote control, or the automation port.

The front display is a 28 character alpha-numeric, vacuum fluorescent display, which is used to identify the source as well as all other operating and testing parameters. The display intensity is user adjustable, and does not stay illuminated in normal use for more than a few seconds after making a selection. Source labels can be customized by the user to identify the equipment connected to the unit. Any time you push a key, you see exactly the setting for that key.

The unit has an error light that illuminates if there is a defect in the source, such as a surface defect in a CD. This light is defeatable so that you do not have to see it every time the unit is making a correction. The volume control on the front panel is motorized for remote control. As you adjust it, you see the dB level on the alpha-numeric display.

The unit has selectable phase inversion and two user-selectable levels of dither. The user can select either the standard or the weighted dither through the front panel.

The built-in diagnostics will test everything from the power supply all the way through the digital processing. It also can test all of the controls and displays. The diagnostic programs are accessed through the front panel controls or the remote control and are identified on the front panel display. After entering the diagnostic mode, specific tests are selected through menus that appear on the display.

Prior to shipment, Vimak connects a series of units through the automation ports for a 96 hour burn-in period. Using Audio Precision test equipment, a random sequence of tests is run on every unit. By the end of the 96 hours, every unit has gone through every single test. All of the data from the tests is stored on the hard disk of the Vimak computer. Consequently, Vimak has a record of the exact parameters of every unit shipped. This way, if a customer complains that the unit doesn't perform the same after a year, they rerun the test and compare it with the information saved in the database. If the results correlate, then nothing has changed in the unit. If they don't match, diagnostics are run to determine what the problem is.

The unit retails for $5,000 with TosLink input. The AT&T glass input is an additional $400. Michael noted that no unit had come back for any repairs.

Vimak has now developed a second product, the DS-1800, and announced it in January 1992. Selling for approximately $3,300, this new product uses the same chassis, but only operates as a D/A converter rather than a complete preamplifier. It has both balanced and unbalanced outputs with a fixed level, and provides for coaxial and fiber (TosLink) inputs. It also has the automation port to communicate with other units. Sonically it performs the same as the DS-2000. Michael noted that they are currently working on three more products.

Michael was asked to explain what made his design philosophy different from the other manufacturers. He explained that his philosophy is to be customer oriented. He wants the customer to have the best product he can have for the money. He goes back to his dealers and existing customers for feedback, in an attempt to find out how he can improve the product. From a technological point of view, they have set

out to be the best, using the best components and designing the components they need. They do not allow any weak links in the chain. They have approached every stage in the circuitry evenly. The total package must meet the needs of the consumer. It must be upgradeable, so that no customer feels left behind.

The units do not currently have any analog inputs. However, Vimak is committed to producing a full line of consumer products in the future. They also expect to add other digital signal processing features in the future (e.g., digital equalization). Michael stated that Vimak will not make any announcement of a product until it has been built, tested, and documented.

TECHNICAL DESCRIPTION OF CIRCUITRY

Michael and Russell had prepared block diagrams in advance to explain the processing stages of the DS-2000. Russell used these for his detailed technical description of the product. They have also written a white paper entitled "DS-2000: Insights into Theory and Design." This paper explains exactly what they have done and how they did it. Copies of this paper were distributed at the meeting.

Russell began his explanation with a block diagram of the audio signal path of the unit. Each of the seven digital inputs has an optimized receiver circuit. After passing through this circuit, the selected input goes into a decoder chip, which extracts the data from the serial bit stream with a local phase lock loop. The output is capable of producing the full 24 bits of audio that are allotted. This signal is then fed to the digital signal processor (DSP)—in this case, the Motorola 56001 mentioned earlier. The signal next passes to the delta sigma modulator (DSM). This is similar to a bit-stream technique, but is a proprietary device created by Vimak. It has a very high order noise shaper, to push the noise into the ultrasonic region, reducing it below the levels of current bit-stream technology.

The output of the DSM is fed through very high speed opto-couplers. This output is a serial bit stream that has a word clock imbedded in it. The decoded word clock is fed to a very high performance phase lock loop. The clock, which is placed as close as possible to the final output stage of the unit, reformats the audio data from the serial one bit streams into four one bit streams per channel. These four bit-streams feed four pulse density modulated digital to analog converters (DACS). These four DACS are balanced by having positive and negative DACS differentially summed and fed into low pass filters. This eliminates any DC offset without the need for any signal blocking capacitors in the audio path. The output of the filters feeds all the output drivers, including the headphone amplifier, the balanced output drivers, and the single ended outputs.

Russell continued by explaining the workings of their DACS, and differentiated them from other companies' bit-steam DACS. The preamplifier functions are inherent in the DACS; when you change the balance or volume control, you are changing a programmable, very low noise voltage reference. This reference voltage alters the output voltage of the DAC. There are four one bit DACS outputting the appropriate code every clock cycle. Each DAC is accompanied by a separate gain value. These gains are summed and differentially summed. The differential sum eliminates the glitches that may be heard in bit-stream conversion. Russell could not go into certain specifics of the circuits they are using since they have several patents pending on this product.

Russell finished by describing the main phase lock loop. It has a very high per-

formance, high speed phase comparator and a balanced loop filter, which is followed by a Bessell 16 Hz low pass filter. They use voltage controlled crystal oscillators (VCXOs), to reduce jitter, and the VCXOs use a quartz crystal element designed by Vimak. There are three VCXOs, one for each of the three standardized sample word rates, but only one is powered at a time, which prevents spurious beat frequencies from getting into the signal. The output then goes to a divider and completes the loop.

PRODUCT DEMONSTRATION

After this detailed technical explanation, Michael demonstrated a brief segment of the diagnostic routine contained in the DS-2000 (running all the routines would take an extended period of time). The diagnostics can also be run through the automation port; therefore, they can be accessed directly from the factory to determine if anything is not functioning properly in the unit. There are various menus to choose different built in tests: displays, remote control, power supply, DSP processor, etc.

We auditioned the DS-2000 by listening to various CDs played on the Krell MD-10 CD transport through the PARM speaker system, driven by four Krell MDA-300 amplifiers. We had the opportunity to try out many of the functions, including the phase reversal and dither selection while listening to this remarkable product. The DS-2000 is an amazing technological achievement, and we are looking forward to the future developments from this new company.

A Tribute to Hy Kachalsky
April 1992
Reporter: David Calvello

The Audiophile Society held its April meeting at the home of Leon Yorburg, the members gathering to pay tribute to our friend and founder, Hy Kachalsky. Hy, who was suffering from a terminal illness, had passed away at his home in the company of his loving family and friends on March 30, 1992.

Arnis Balgalvis, the new President of The Audiophile Society, delivered a warm and heartfelt remembrance of his dear friend, with other members following with their own stories of how they first met Hy and how they were affected by this unique man. Many recounted the touching ways in which Hy made each person feel special. Hy truly reached out to everyone—with a kind word, a friendly smile, a warm embrace. Hy loved people and people loved Hy. His energy, optimism and his zest for living were unfailing right up to the last day of his life. We were all blessed having had the opportunity of being his friend. We also very fortunate to have Estelle, Hy's wife, with us at the meeting to share all the wonderful, fond memories.

With Hy's passing, the club will continue to carry on, with the regular meetings held at Leon Yorburg's house on City Island.

Application for Membership in The Audiophile Society

Categories:

1. **Full Members**: By Appointment.
2. **Associate Member**, $50: Associate Members can not vote or hold office. Vacancies in the Full Member roll are filled from the ranks of the Associate Membership. *Nominations are made by the Executive Committee on the basis of contribution to the society.* Dues include a subscription to The Audiophile Voice and the monthly Audiophile Society Bulletin.
3. **NonGeographic Member**, $30: This category is for those members who live outside the Tristate area (NY, CT and NJ) and therefore can rarely attend the monthly meetings of The Audiophile Society. Dues include a subscription to The Audiophile Voice and the monthly Audiophile Society Bulletin (Add $15 for residents outside the US).

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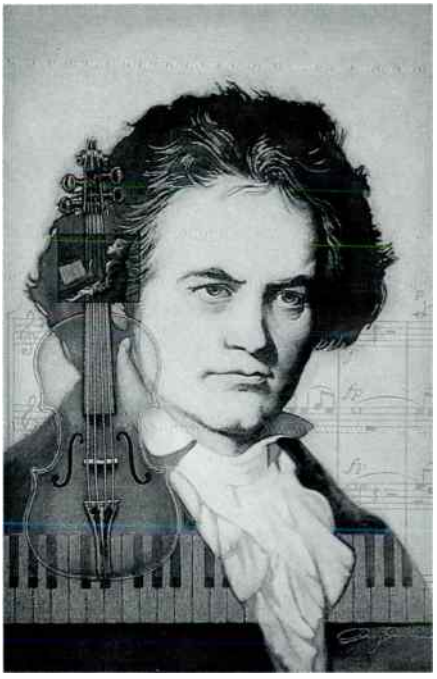

About the Cover

The stunning portrait of Beethoven was painted exclusively for *The Audiophile Voice* by nationally recognized illustrator, George Angelini.

With a successful career spanning nearly two decades, Angelini's works have received numerous awards and honors. His clientele includes IBM, Upjohn, Johnson & Johnson, NBC, Smithsonian Magazine, The Reader's Digest, and Golf Magazine.

The Beethoven portrait represents the first of a series of cover paintings which Angelini will be producing for *The Audiophile Voice*.

For further information about the cover series, please contact Debra Ann Lupie, at (914) 737-5317.

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What the Critics have to say...

At its $1395 asking price, this has to qualify as a minor miracle.

*Dick Olsher, **Stereophile**, Vol.15 No. 8, August 1992 (USA)*

I conclude that the SFL-1 is the only preamp that can be described as having really high quality sound and yet be very affordable.

*Y.K. Chan, **AUDIOPHILE**, Issue 71, February 1992 (Hong Kong)*

"O Canada, your native son, Sonic Frontiers, has done you proud!"

*Dick Olsher, **Stereophile**, Vol.15 No. 8, August 1992 (USA)*

Given the sound quality, the very high craftsmanship in construction, and the overall parts quality, I would call the Sonic Frontiers SFL-1 hybrid line preamplifier something of a bargain at its price.

*Andrew Marshall, **Audio Ideas Guide**, Winter 1992 (Canada)*

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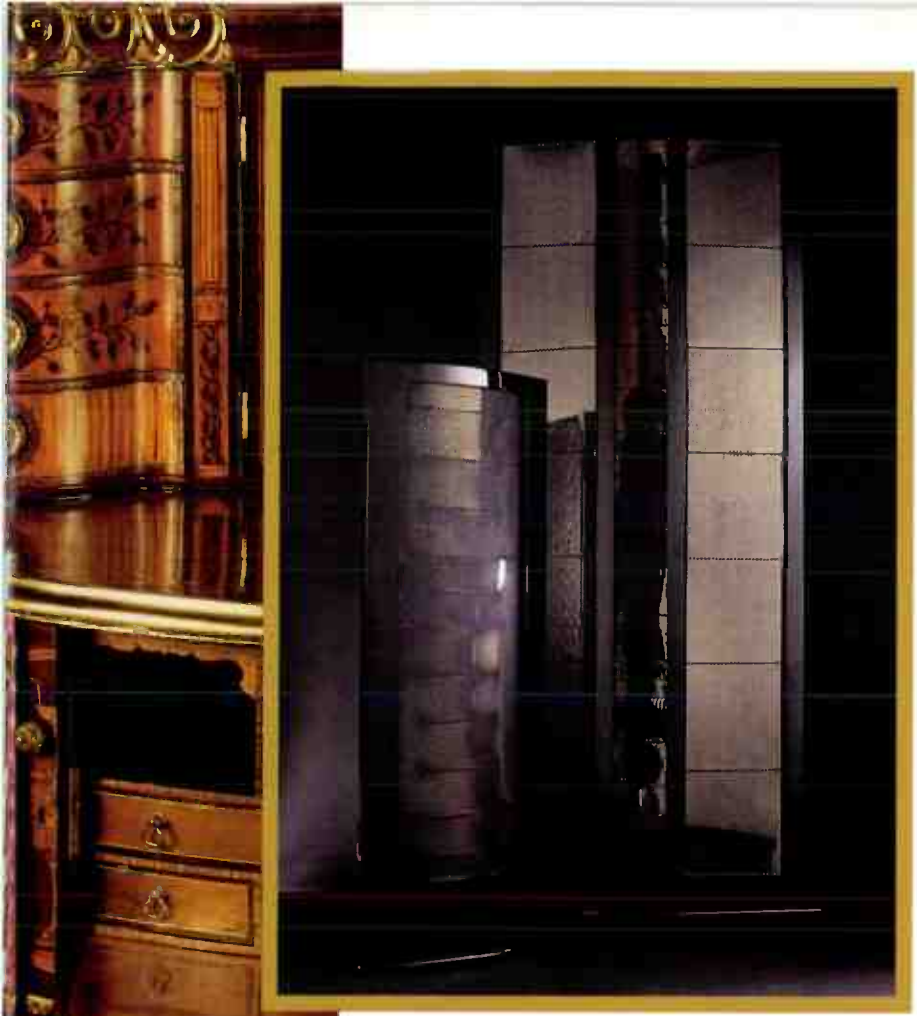

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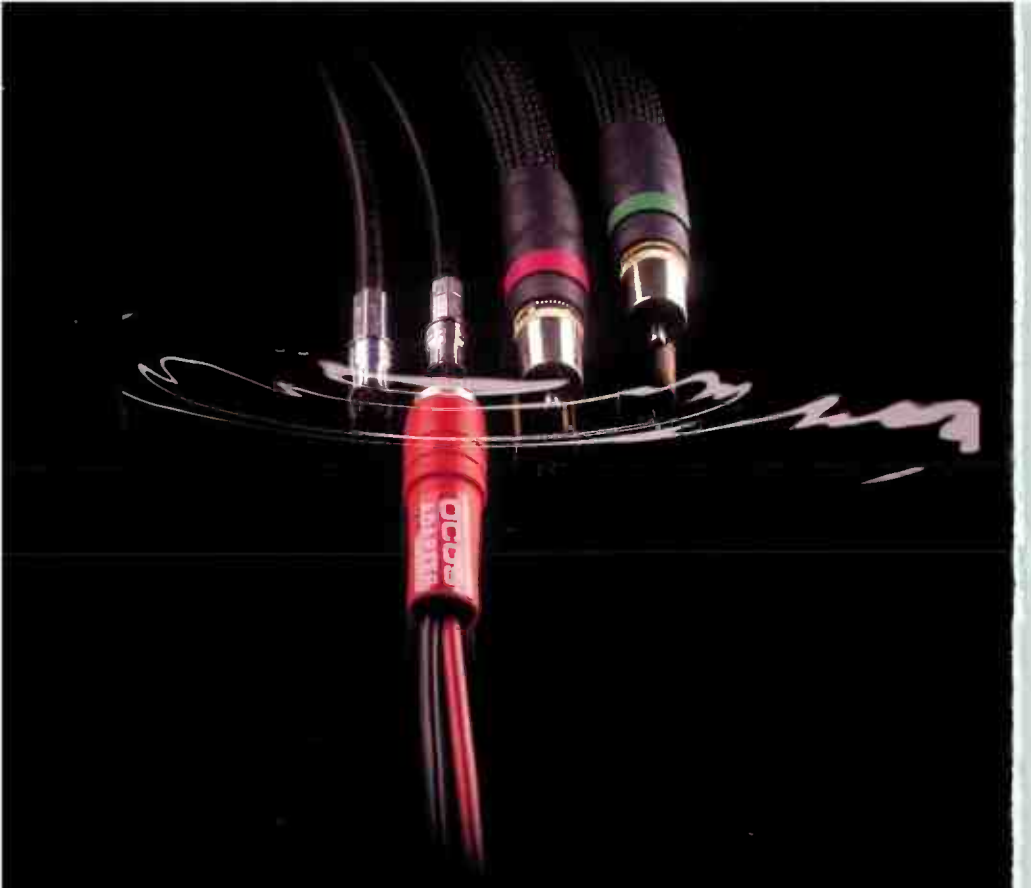

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