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The Sound Lab Millennium-1 Electrostatic Loudspeaker

Since the day I first heard a double pair of KLH Model Nines, many years ago, I've had a love/hate relationship with electrostatic loudspeakers. Their virtues have always been plain – superb transient speed; extremely low levels of driver and enclosure coloration; unbeatable "openness," transparency, and inner detail; and a top-to-bottom coherence, a "single-driver" sound, that no other type of drive system quite matches. Alas, their flaws have also always been plain – chiefly and typically, a lack of power and extension in the bass that robs lower-pitched instruments of color, body, and impact, thinning their textures and the textures of large ensembles; "beaming" in the treble that can make them sound dark and closed-in off-axis and rather too "hot" and aggressive on-axis; a tendency, due to driver-excursion limitations, to "clip" extremely hard transients, limiting the dynamic scaling of many instruments in the *ff* to *ffff* range; and "difficult" loads that make picking the "right" amp a tricky proposition.

Over the years, I've tried many different kinds of electrostats, hoping to find that magic one that "does it all," that gives me the full measure of electrostatic virtues while eliminating (or nearly so) the flaws. But the quest has been fruitless. For every octave of bass I've gained with certain designs, I've lost a significant measure of speed, transparency, neutrality, and inner detail. For every gain in speed, transparency, neutrality, and inner detail, I've lost instrumental color, body, and foundation.

I've run through Acoustats (from Xes on), Martin Logans (from CLSes Is to IIz'), Quads (from Originals to 63s), KLHs, Kosses, RTRs, and, frankly, I'd stopped running – until now. While the Sound Lab Millennium-1s (M-1s) I'm about to review don't solve all an electrostat's problems, they come closer to doing so than anything else I've tried or heard. Which means they come closer to the sound of the real thing than any other electrostat I've heard – or, for that matter, virtually any other speakers.

Though they have a great reputation for musicality among the cognoscenti, Sound Lab electrostats may not be as familiar to you as certain other brands. The reason is two-fold. Sound Lab is a small company that handmakes its products in small quantities and distributes them through a select dealer network. In addition, Sound Lab has not gone fishing for publicity to the extent that other speaker companies have. (Indeed, outside of the Pristines, I don't believe that a Sound Lab loudspeaker has been reviewed in *The Absolute Sound*, before now.)

Don't let the company's low profile fool you. The Sound Lab M-1s (which are, essentially, Sound Lab A-1s with a bit less wood frame) are world-class transducers, engineered and built (in beautiful Park City, Utah) by Dr. Roger West – an aerospace engineer who has been perfecting electrostatic design since he and the late Dale Ream founded Sound Lab in 1978. (Actually, West has been perfecting 'stats since he worked on the Janszen loudspeakers, in the late Sixties and early Seventies.) The M-1s, like all Sound Lab products, incorporate West's research, which, judging by the sonic results, has significant advantages over other electrostatic designs.

What does West do differently? First, he's built his speaker – and it's big, six-and-two-thirds-feet tall, very nearly three feet wide, with over 15 square feet of radiating surface – using a unique, patented geometry. West believes that the dispersion angle of a loudspeaker and the acceptance angle of the microphone used to make recordings must be the same, if accurate soundstaging is one of your goals. This means that a 'stat must have a wide dispersion pattern.[1]

Other manufacturers of electrostats – MartinLogan, for instance – have also come to this conclusion. The "curvilinear" CLSes – with their bowed membranes and bowed stator panels – were M-L's solution. It is a solution, however, that West rejects. The trouble with curved panels, says he, is that such a shape makes for a "non-symmetrical transduction characteristic, since the membrane's tension increases

1 West uses typical cardioid mikes with 90-degree angles of acceptance as paradigms, but as readers may know, many great recordings are made with spaced-omni microphones á la Mercury, or pressure mikes such as the ones that Mapleshade's Pierre Sprey uses, or multiple cardioid/omnis in combination á la Decca or RCA or DG, or Blumlein capsules with figure-eight acceptance patterns buttressed by omnis and spots for ambience pickup á la EMI, etc. While I'm not saying that West was wrong, I don't think his microphone analogy is entirely convincing.

as the membrane expands outward and [diminishes] as it moves inward."[2] This results in mechanical limitations that, among other things, restrict dynamics and full-range frequency response. According to Dr. West, only a flat surface provides the truly symmetrical transduction characteristic (i.e., the identical free range of motion forward and back) that allows for large linear excursions of the electrostatic membrane – and accurate tracking of large-scale dynamic swings, as well as full frequency response.

The question then becomes how do you make something that needs to be *flat* perform at its best *round?* West and Ream have come up with an ingenious solution: a piece-wise approximation of a curved surface, that uses carefully angled "facets" of flat surface to form the curve.

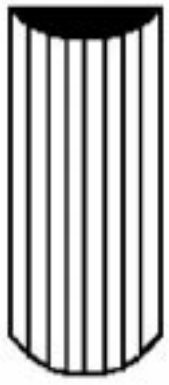


Figure One. How a faceted surface can be made to approximate a quarter-cylinder.

A membrane of high-compliance, extremely low-mass (less than 100-millionth of an inch thick) polyester is stretched between front and back plastic frames that have been formed into adjacent flat facets. Each facet of the frame is further subdivided into "panels" of gradually increasing size, arranged top to bottom:

Figure Two. Sound Lab M-1's panel-like construction.

The whole contraption (socked in a black grille, with wood bunting on either side) forms a quarter-cylinder through which, when the light is right, the paneled facets can just be seen.

Each of the panels within a facet houses separate stators, so that each (flat) segment of the membrane is individually charged, front and back. There is ingenious reasoning behind this. Though all portions of the membrane and each of the stators are connected electrically to the same power supplies and see the same signals, effectively dividing the membrane up into separate panels of varying size allows West and Ream to "distribute" the resonance of that membrane. A bunch of varying sized panels will have smaller amplitude resonances at different frequencies than one large panel, which has one large amplitude resonance at one frequency.[3] Since "drumhead" resonances are the chief reason why electrostatic bass is so often "one-note," in theory, the Sound Lab M-1s should have considerably less peaky and more extended bottom-end response than typical 'stats.

And, brother, is this ever the case. The M-1s are *far and away* the fullest-range electrostats I've heard – and the only ones I know that reproduce the deep bottom octaves with the same speed, quality, and clarity they bring to the midband and treble. The result is something I haven't heard in years, not since the big, multi-panel iterations of the Magneplanar loudspeaker and, even then, not with this truth of color or depth of pitch. On classical recordings, contrabass and cello choirs spread out behind and to the side of the speaker in distinct rows, and within those rows you hear *every* bow, *every* string, the body of *every* instrument. It's like seeing the forest *and* the trees. Not only do you get a heightened sense of the numbers of musicians and instruments at play; you get a heightened sense of the way those musicians and their instruments work together to produce music. On good, bass-rich discs, like the High Performance recording of the suite from Bartók's *Miraculous Mandarin* [BMG], the effect is dazzling. Air is moved and coupled to the room with something approaching the transient speed, tonal color, clarity of line and ensemble, and acoustic power of the real things. No, you do not get quite the same lifelike weight and "slam" you get through the estimable Nearfield Acoustics PipeDreams (which are reproducing these octaves via eight 18-inch subs and 48 midrange/woofers), but you get darn close, *and* you get the superior sense of octave-to-octave continuity that comes when you are using what amounts to a single, phase-and-amplitude-coherent drive system (i.e., when you're not "crossing over" to drivers of different mass or material composition).

The M-1s' bass is so rich, so deep, and so powerful that it can become a liability if you don't take the kind of care that Sound Lab recommends in setting these (very large) critters up – and determining where you're going to set yourself up to listen.[4] For example, my room boosts very low frequencies (30 Hz and below), which generally works to the advantage of many loudspeakers – and recordings. But before I carefully damped the rear (behind the speakers) and front (behind me) walls with RPG diffusors, abflectors, and bass traps, the M-1s' low bass output was a mite overwhelming – so prodigious that the cushions on my leather sofa were flexing in and out, in tune to the obbligatos of Hammond organs, Fender basses, and Roland synths. Even the

2 Roger West, "The Complete White Paper," p. 18. (Available directly from Sound Lab.)

3 As a side benefit, distributing the resonances of the membrane means that resonant energy is available to boost bass response more uniformly, rather like an equalizer that supplies a modest, evenly distributed boost at select frequencies throughout each of the lower octaves.

4 Because they are large full-range dipolar line stages, which produce big columnar wavefronts in the nearfield, the M-1s don't quite "gel" into top-to-bottom coherence unless you sit at least ten feet away.

Pipedreams don't produce this kind of effect, which, by the way, is plenty realistic – sit near enough to the stage at any rock club and you'll see (and feel) what I mean – but more than a little disconcerting in a home listening room.

Lest you think that the Sound Labs' powerful bass implies muddiness or bloat of any kind, think again. These things have extraordinary speed, clarity, and coherence in the critical region between lower midrange and bass (well, everywhere, actually), which means that, for once, you get the same definition on drum barrels – be they snare, side, conga, bongo, timp, or bass – that you generally get on drumsticks and drumheads alone. (Try the sharp rimshots and whooom-p of the conga at the start of Steve Winwood's "Higher Love" [Sony], for examples.) On well-recorded piano – say Valentina Litsisa's on the Cisco/HDCD recording of Rachmaninoff's Sonata for Cello and Piano – the bottom octaves of her grand flood the back of the stage and lap against the rear walls like they were spilled from a barrel, giving you a lifelike sense of the sheer volume of sound that a concert grand piano, played *forte* and pedaled *sostenuto*, can produce in its bottom octaves. To hear this kind of bloom in the bass, combined with the exceptionally realistic way the M-1s reproduce the bell-like attack and sparkling clarity of the piano's middle and top octaves – and the lifelike way they stagger those octaves in space, the treble floating out and above the sounding board, the middle registers slightly behind and closer to the keyboard, the bass notes to the rear of the instrument, where those long thick bass strings rattle against the sounding board – is to hear something very close to an actual grand piano. Like the PipeDreams and the Maggie 20Rs, the M-1s have the soundfield size and superior resolution to show us not only how instruments make music, but how they generate *sound* – how they "work" as chordophones, aerophones, membranophones, idiophones, how (and by what means) they are excited into making sound, and how (and with what transient speed, acoustic power, and directionality) that sound couples to the air in each of their registers. Our sense of what I call instrumental "action," and thus our sense of the physical presence of the instrument, is greatly heightened.[5]

The PipeDreams are a bit better than the M-1s at reproducing instrumental action and thus the "physical" presence of most instruments (because of the

5 Just as an aside, let me try to explain what I mean by "action" a bit more fully. As an example, when you hear a voice on a stereo system it is usually imaged as a flat projection – a spot of sound, like a spot of light projected on a screen. If it has any dimensionality, it is a dimensionality that extends "back" toward the rear of the stage – a bit of fullness of roundedness or shading that we call "body." When you hear a voice in life – just listen closely, for a moment, to someone else speaking to you from a short distance – you'll hear that voice not as a flat projection, a two-dimensional spot of sound like a spot of light projected "back" onto a screen, but as a sound that is projected "out" towards you, like a spotlight beaming in your direction.

That "projection" of sound (and of the air that carries it forth) is what I call "action," because it is a dynamic event. An instrument's "action" (the accurate three-dimensional projection of its sonic image) changes with changes in intensity and changes in register. Think of how a flute can blend into the ensemble when it is playing *pp*-to-*mf*; then think how that same flute can ride above an orchestra, suddenly perfectly distinct and comparatively enormous in size, when it is played forte or stronger – or when the rest of the ensemble plays very softly behind it. Or think, as per the example given in the text above, of how the projection of a piano's sound changes with register and intensities – the top octaves floating well forward and above the sounding board, the middle registers just above the sounding board and closer to the keys, the bass registers projecting in an omni pattern that can make them seen to come from slightly behind and beneath the instrument. But then hit a middle register note sforzando, and you'll hear the sound leap forward and come hurtling at you like a ping-pong ball in a 3-D movie.

Lest you think I'm arguing for a loudspeaker that sounds "forward" – or that typically stages and images in front of the plane of the loudspeaker – I am not. Regardless of where the soundstage begins – in advance of the loudspeaker, in the plane, or behind it – a speaker must project instrumental "action" with some semblance of realism, if you're looking to reproduce fully the presence of an instrument or a musician in your listening room. I do think that a speaker must be able to move air with a certain speed and in a certain volume to do this trick well – and that means it has to be large enough and lithe enough and dynamically alive enough to project these intensity-dependent changes in image size and dimensionality. (I also think that multi-channel may have a salubrious effect on capturing instrumental action – and thereby the fully three-dimensional presence of instruments and musicians – if it is done right.)

How Electrostats Work

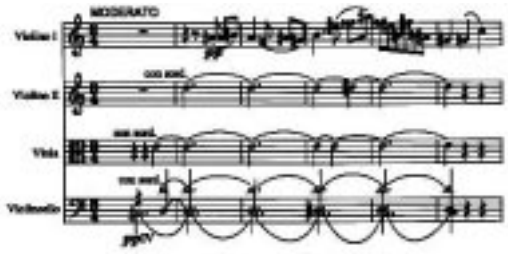
The theory behind electrostatic loudspeakers has been around since the 1870s, but the lack of suitably low-mass, high-compliance materials for the "diaphragm" (the driver) of the speaker hampered development, until Dupont invented Mylar in the 1950s. How an electrostat works is fairly simple, if a bit non-intuitive. A thin, lightweight Mylar membrane coated with an electroconductive material (the diaphragm) is stretched between two plates with holes in them (the stators), one plate in front of the diaphragm, one plate in back. The diaphragm is connected to a high-voltage, low-current bias supply, charging it with a constant electrostatic charge. The front and back stators are connected, respectively, to the positive or negative poles of a coupling transformer that supplies the high-voltage audio signal. When the positive half of the audio signal is fed to the front stator, it "attracts" the electrostatically charged diaphragm to move toward it, in synchronization with the positive audio signal. When the negative half of an audio signal is fed to the back stator, it, in turn, attracts the electrostatically charged diaphragm to move toward it, in synchronization with the negative audio signal. The front-back movement of the diaphragm (like the movement of a cone in a dynamic driver) generates sound waves, both in-phase and out-of-phase.

Because the diaphragm of an electrostatic loudspeaker is extraordinarily low in mass (in the Sound Labs' case, weighing less than an equivalent body of air 2mm thick) and because the entire surface of the diaphragm responds uniformly to the audio signal at all frequencies within its range of travel, an electrostat's transient response closely mirrors electrical input. For the same reasons (low mass, even distribution of charge and signal), the diaphragm has low mechanical impedance at all frequencies, meaning that it couples its more phase-and-amplitude-linear signal to the air more efficiently than higher impedance drive systems (like cones and ribbons).

Of course, these advantages don't come free. Electrostats are very tricky to build – insuring the even distribution of the bias charge on the diaphragm, precisely maintaining the spacing of the stators to provide maximal (and evenly distributed) electrical force on the diaphragm, insulating the diaphragm and stators to prevent "arcing" or other high-voltage breakdowns are all matters of high art and science. Not every company is up to these challenges, and problems have often cropped up in the past with many different kinds of electrostats. For example, I had to replace the panels on my CLSes no less than four times over a six- or seven-year period, due to hygroscopic breakdown (moisture in the air that crept into the "surround" that distributes the charge to the diaphragm, shorting the drivers out). To give Martin-Logan its considerable due, the company replaced the drivers at their expense *every time they failed.* I didn't even have to pay shipping. (This was long before I became a reviewer for *The Absolute Sound.)* Friends of mine have also had problems with Quads (particularly the Originals), KLH 9s, Kosses, Staxes, etc. Although the latest generation of Sound Labs speakers have a good reputation for reliability (and are warranted for three years against driver failure), when you're dealing with very high voltages the chances of catastrophic breakdown are considerably higher than they are with magnet-driven drivers. JV

sheer amount of air they move and because of their dynamic range, which, at the *fortississimo* end of the dynamic spectrum, eclipses that of the M-1s), but the Pipes are six times as expensive and three times as large as the M-1s. For a truly full-range, single-driver speaker, the M-1s do quite well dynamically, thank you. For electrostats, they are remarkable, reproducing everything from the softest brush on a snarehead to the blast of a trumpet with ease and naturalness. Moreover, they eclipse the Pipes when it comes to timbres, very low-level dynamic and harmonic nuances, and transient speed.

Let's talk about timbres for a moment. Although I believe that a speaker's ability to track dynamic changes faithfully is every bit as important as its ability to reproduce pitches and timbres faithfully (and plays a direct role in the latter), I have to say that the M-1s' way with tone colors is phenomenally good. On well-recorded music, say the Bartók *Third Quartet* (which, along with its five brethren, would make my pantheon of the century's great chamber music recordings in the Juilliard version on Columbia), these things are gorgeously "right." Consider the opening bars of the quartet:



This amazing passage is made entirely of tone colors. The cello, viola, and second violin sound a four-note tone cluster (with each note only half a step apart but exploded by octave displacement) that is played *pianissimo* and *con sordino*, i.e., muted. The clever way Bartók staggers the entry of each instrument, from cello to viola to second violin, leads you to think he's sounding an arppegiated chord (i.e., establishing a key), when, in fact, he is creating a color – a soft, misty, unearthly dissonance, like the radiant noise at the end of this Bartókian universe. Against this eerie softened background dissonance, the first violin sounds a lorn melody that is itself a tone cluster turned into an air.

To get this passage to sound as I've heard it in life, a loudspeaker must be able to reproduce the fine blend of small intervals among the notes each instrument plays, at the same time reproducing the distinctive color each instrument contributes to that blend as it plays those notes (the Ds and D sharps of the second violin and cello – and one of the cello's Ds is played as a harmonic! – the Es of the viola, and the bramble of sharped and double-sharped seconds, diminished and augmented fourths and fifths of the first violin), as well as the intensities (*pianissimo*) and articulations (*con sordino* and without vibrato) with which they are being played. Often those very fine gradations of color, intensity, and articulation are planed down by loudspeakers (and electronics) with lesser resolution so that, for example, the dissonance of those Es and Ds sounds slightly less distinctly multihued and dissonant, more like a single D. All I can tell you is that the M-1s hold every instrumental color distinct, while reproducing with lifelike sonority their eerie blend and the mystery it lends the opening bars.

When a speaker can reproduce the tiny fluctuations in intensity and color of a bowed or plucked string and combine that with transient speed that is nonpareil, chamber music like the Bartók quartet and chamber musicians like the incomparable Juilliard simply come to life there in front of you. Sitting and listening to this music with two friends (and we have heard this piece *many* times before), I realized that there was a respectful quiet in the room like one hears (and participates in) in a concert hall. They were holding their breath – I was holding mine – so lifelike and riveting was this illusion of music-making, so ravishing was the music. *That* is great stereo.

Nor is this an isolated incident. Some speakers, even some very good speakers, hold you at arm's length from the music. They make you aware, whether you are always conscious of it or not, that you're listening to a mechanism – to a mechanical device. The M-1s do not have this kind of character. They invite you into the music, be it chamber or orchestral or rock or jazz, with a graciousness and self-effacement that is almost unprecedented in my experience. (The Shun Mook Bella Voce Signatures have this quality, although they don't have the same level of inner detail or transient speed as the [twice as expensive] M-1s.) On great recordings of large-scale music, such as the wild and wonderful Byron Janis/Charles Munch rendition of Rachmaninoff's

Setting Up the M-1s & Breaking Them In

The M-1s come to you in two parts – the speakers and their electronics modules, which bolt to the bottom rear of each speaker. You must mate the two up – a relatively simple task if there are two people around – before you can listen. Sound Lab gives you a choice between two kinds of feet: sliders and spikes. For best sound, use the spikes.

The loudspeakers must be plugged into a wall (via a supplied IEC cord). Although I have not experimented with power cords, chances are you can change the sound by changing these cords. (This was certainly the case with CLSes.) However, remember that a change isn't necessarily better, just different.

Sound Lab suggests a procedure for biasing the panels that seems to work well. Follow it, but be aware that bias changes take some time to "take hold." Don't judge such changes until you've given the speakers an hour or two to settle down. The speakers themselves will take *three-to-four hundred hours* to break in – perhaps even longer than that. Just keep playing them. (They won't sound bad out of the box, just a bit dark and bass heavy.)

Because the M-1s are dipoles they like to see some space between themselves and the rear wall. Allow at least five to six feet (and another ten to twelve between you and the speakers). Distance from sidewalls is less critical with dipoles (because they don't radiate their energy to the sides). However, because of the M-1s' wide dispersion, try to keep them at least three feet from the sidewalls and at least six or seven feet apart. Toe-in will depend on how far you are sitting from the speakers. Start at about 15 to 20 degrees. JV

Third Piano Concerto [BMG, and a must-buy, for piano lovers], the soundstage is so filled with the presence of the musicians and the glorious sound they make that the effect is electrifying. Yeah, Munch goes a little nuts in the Third Movement, and Janis follows him, but the fire of that Steinway and the musician playing it, its completely lifelike scintillation and brilliance, and the gorgeous sweep of accompanying strings, the stentorian brass anthems, carry you, if you let them, to a pitch of delight that resolves into wonder – that human beings can create and execute such remarkable things. In a concert hall, the experience of a great performance is marvelous; on a stereo it is doubly so, for it reminds us of just why we got involved in this *farchachdat* hobby in the first place. It revives in us that sense of magic that goes far beyond charts and graphs and theorems and all of the bullshit that sometimes make me think there is a conspiracy of joyless people determined to reduce all delight to numbers – the magic of sitting in your own home and hearing great musicians conjured in front of you, out of thin air.

I could go on about the M-1s superb way with transients (if you want to hear the snap of a guitar string or of a violin pizzicato reproduced with lifelike speed, color, and duration, you need go no further), the human voice (the best, least colored, least mechanical presentation I've heard), winds, treble instruments (once again, the best, fastest, airiest, least colored top end), but I'd run out of book. Maybe I could put it best this way: Have you ever heard an electrostat that can do equal justice to Sheryl Crow having fun till the sun comes up over Santa Monica Boulevard, to the warmth, bite, and melancholy ache of Miles Davis' horn-playing on *Kind of Blue*, to the strummed obbligatos and lorn pizzicatos of the Beaux Arts quartet in the third movement of Donald Keats' austere and mysterious *Second String Quartet*, to the massed forces of the Boston Symphony and Byron Janis playing their wild hearts out on Rachmaninoff? Neither had I until now.

Oh, nothing's perfect. Even at the M-1s' substantial best, they do not have all the "weight" of big dynamic loudspeakers; and their incomparable transient speed has its limits – although they don't clip *fff* musical passages, they do round them a bit (very attractively, actually) in comparison to Nearfield PipeDreams or Avantgarde Trios. Also they will not soundstage – at least they won't in my room – with the incredible "wrap-around" three-dimensionality of the Pipes (but then *no* other speaker I've heard, save perhaps the Avalon Eidolons, will). I would have called the stage the M-1s present world-class, had I not heard the PipeDreams, but the Pipes spoil you for everything else in this regard. As is, the M-1s' soundfield is quite impressively deep and broad, wonderfully layered, supremely detailed, and (unlike the Pipes or the big Maggies) grainless regardless of listening level. (Like every large speaker, the M-1s will play very loud; but unlike certain other large speakers, they do so with ease. Moreover they do not *have* to be played very loud to be enjoyed fully; their resolution is so high, their dynamic scaling so good, and their noise floor so low, you can hear all the way "into" the soundstage, even at reduced volumes.)

As with so many electrostats, driving these speakers is a bit of a trick. They need considerable power and, in theory at least, don't really cotton to solid-state (because their impedance rises to 50 ohms or better in the bass). Nevertheless, I managed to get a remarkably clear, clean, neutral, present, and highly detailed sound using them with the Krell 650 FPB CAST-technology monoblocks; for a richer, sweeter, fuller, just as present, almost as detailed (albeit slightly darker) sound, Ralph Karsten's MA-2 Mk II.2 OTLs are hard to beat. The Audio Research Reference 300s also do a good job. (Without annoying you, the M-1s will tell you exactly how happy they are with whatever is upstream.)

Placing these things in your room is also a bit of a trick (see Sidebar 2). And no matter where I placed them in my room, they never completely "disappeared," the way certain mini-monitors or the heavily damped boxes of the PipeDreams do. While the M-1s don't have much of an enclosure, they do have a bit of one (to support the frame) and, unlike the Sound Labs "Ultimate" line, which uses steel frames that can be mass-loaded with shot or sand, that little bit of enclosure isn't damped or braced. While the M-1's "box" doesn't add a "box sound" to the presentation, it does make you a little more aware of the

JV's Listening Biases

In a recent issue of *The New York Review of Books*, pianist Charles Rosen wrote a fascinating article about the athletic (or balletic) aspects of piano playing. In the course of the piece, which branches out in many interesting directions (including the way the piano, and composing at the piano, fed the chromaticism of Nineteenth Century music and the triumph of the dissonance in the Twentieth), Rosen has this to say about a pianist's tone:

> Each pianist can develop a personal sonority that makes his or her work recognizable…A chord is more or less rich in sonority according to the way one exploits the vibration of the harmonics or the overtones. The pianist must rely on aural experience to decide which notes in a chord to emphasize…[1]

I'm quoting this passage because it goes straight to the heart of what I think a stereo should do. Hearing clearly the way Horowitz, say, sounds the E-flat chords at the start of Chopin's Nocturne in E Flat, Op. 9, No. 2 on his brilliantly tuned Steinway, and hearing just as clearly the way Rubinstein sounds these same triads on *his* Steinway is to hear the very differences in sonority that Rosen talks about – it is to hear music, instrument, and musician with equal presence.

By this word, "presence" I do *not* mean hi-fi "presence" – an elevated or forwardly projected midrange; I mean presence in the sense of "being in the presence of" music, musicmakers, and their instruments – all three equally and alike.

Although it is difficult to prioritize the various elements that give you this lifelike sense, as so many of these elements are interdependent, I'd have to say, if pressed, that dynamic range and scaling and very low-level changes in intensity and timbre are three of the keys – and three of the things I listen for. They give life, freshness, and excitement to the listening experience, raise goosebumps, make "there" there. The best imaging and soundstaging in the world, the richest tone color, won't make instruments and instrumentalists come to life unless the weight of the touch behind the keys – and the very way that touch sets air in motion – aren't being reproduced, as well.

1 Charles Rosen, "On Playing the Piano," *The New York Review of Books* [October 21, 1999].

speakers as sound sources than you are with, say, the PipeDreams or the Shun Mooks. But only a little, and never distractingly so.

I guess you can tell that I love these things. Along with the PipeDreams, the Maggie 20Rs, and the Avantgarde Trios, the M-1s are among the handful of truly great speakers I've auditioned in my home. My wife and a goodly number of my audiophile friends would put them at the head of that august bunch. And I would, too, if we're talking about High End speakers you don't have to be very, very rich to afford. I just hope I get the chance to keep them a while longer, because the Sound Lab Millennium-1s are musical in the best sense of the word. They make listening to music, any kind of music, the pure pleasure it ought to be.

JONATHAN VALIN

Jonathan Valin is a novelist by trade. He has written 11 "Harry Stoner" mysteries, and worked in the film and television industries. For the past several years, he has been writing about music, audio, and films, first for TAS, then for Fi *(which he also edited), and now for TAS again (and finally).*

MANUFACTURER INFORMATION

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E-Mail: soundlab@burgoyne.com
www.soundlab-speakers.com
Source: Manufacturer loan
Price: $14,900 as equipped; $13,700 without toroidal transformers

SPECIFICATIONS

Frequency Response: 24 Hz to ultrasonics
Power: 100 watts (min.), 400 watts (max.)
Impedance: Nominally 50 to 100 ohms at low frequencies, tapering gradually to a minimum of 2 to 8 ohms at about 22kHz
Sensitivity: 88dB/1W/1M. measured at 4 meters

ASSOCIATED EQUIPMENT

Clearaudio turntable/tonearm; Shun Mook m-c, Grado Platinum Reference, Clearaudio Gold-Coil Absolute cartridges; Burmester 979 transport/980 DAC, Krell 25sc CD playback system, Wadia 270 transport/27i DAC, Audio Note DAC-5SE; Audio Research Reference 2 line stage, Audio Research Reference phono stage, Conrad Johnson Premier 15 phono stage, Lamm Audio L-1 line-stage preamp, Lamm Audio L-2 line-stage preamp, Convergent Audio Technology "Ultimate" full-function preamp; AtmaSphere MA-2 Mk II.2 OTL monoblocks, Krell FPB 650 CAST monoblocks, Audio Research Reference 300 monoblocks; Nordost SPM and Quattrofil, Transparent Reference XL, Purist Dominus, WireWorld Gold Eclipse III cables; RPG Diffusor system, ASC tube traps, Shun Mook pucks, Brightstar sandboxes, Townshend Seismic Sinks, snips, snails, puppy dog tails