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Electronically reprinted from April/May 2005

Issue 153

## **RADICAL REINVENTION:** **Gilmore's Model 2 Speaker**



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# The Cutting Edge

EXOTICA

## Gilmore Audio Model 2 Loudspeaker

Robert E. Greene

Panel speakers (boxless dipole radiators) commanded a lot of attention in the early days of modern high-end audio. The Magneplanar Tympani 1D, the Infinity Servo Static, and, later, the various Apogee models—these were once the stuff of dreams. Standing somewhat to the side of these was the Carver Amazing, a pure dipole (later, the name was applied to a speaker with a box woofer and panels for mids and highs).

The Carver was widely misunderstood. People decided, without listening (and also, it seems, without thinking clearly), that the bass would boom because the speaker used woofer resonance to counteract dipole roll-off. The real point, of course, was that the two effects, moving in opposite directions, produced bass that was not only flat but phase linear, i.e., perfect in its timing.

In actual practice, the Amazing had some of the best bass ever. I should know—I still own a pair. It was no slouch in the mids and highs, either, though it lacked extreme top-end and had a few glitches elsewhere. Somehow, the misconception about the bass never allowed the Amazing to receive the critical reputation it deserved. But the reasonably priced speaker sold well enough that Bob Carver doubtlessly found his bruised feelings (if any) soothed by his bank balance.

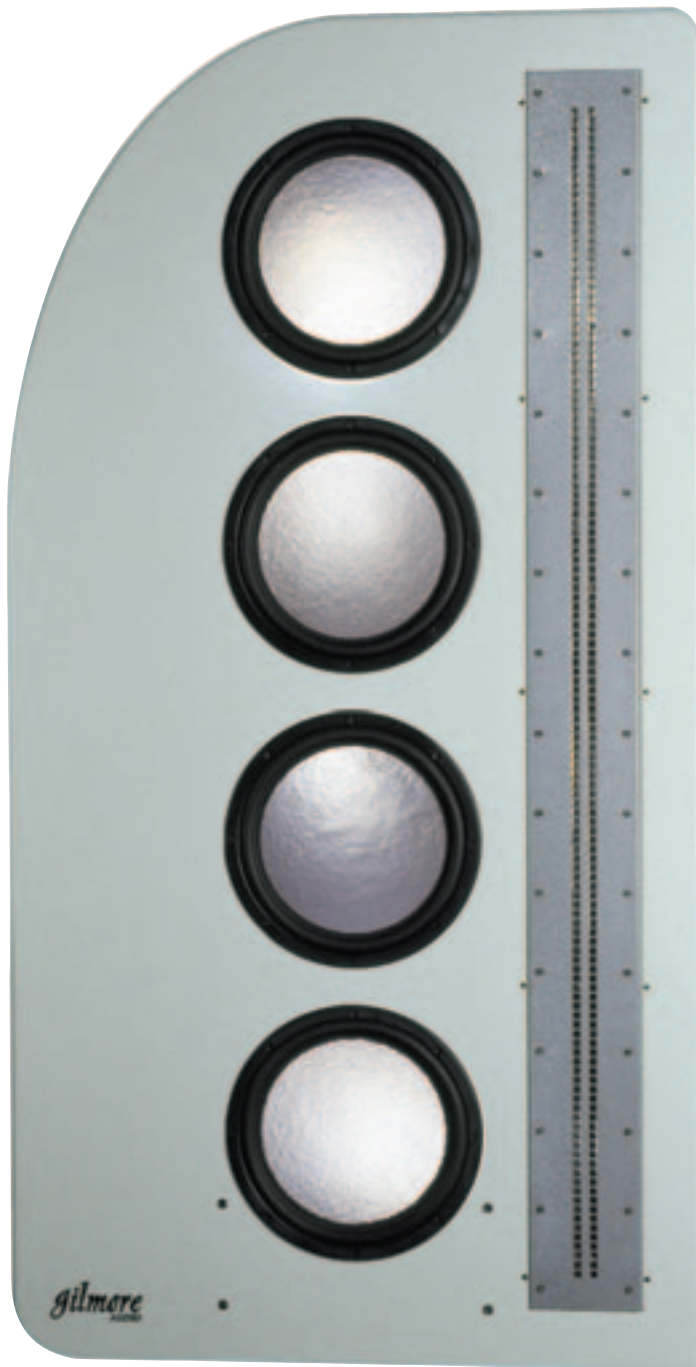
In any case, in the mind of designer Mark Gilmore, its memory lived on, and the Gilmore Model 2 is, as it were, a contemporary homage to the Carver. In many ways, the Gilmore is a quite different design not only in its drivers, but also in its use of a 24dB-per-octave woofer-planar crossover and in the shape and composition of the panel. The basic line of thought, however, is similar, and the speakers have this in common: fantastic bass.

The Gilmore has been demonstrated at shows by distinguished electric bass player Abraham Laboriel playing live through the speaker. It is no wonder that he was chosen to do this kind of demo—with a -3dB point of 17Hz and a huge dynamic capacity, there is nothing quite like the Gilmore in the bottom octaves. As an audiophile friend said after listening to the Treya Quartet [Divox], “That’s the best reproduction of a acoustic double bass I’ve ever heard.”

There is a great advantage to dipole operation in the bass, as HP noted years ago when he combined the Tympani 1D bass panels with an Infinity mid/high unit in an historic early high-end system. For technical reasons that are a bit outside the scope here, dipole bass drives the room better than boxed omni bass (unless the latter is in the corner and EQed to flat). The bass of the Gilmore will redefine your idea of what is possible in that department, unless you have listened to full-range dipole bass radiators before.

This superb bass performance extends up into the lower midrange, as well. Many speakers sound really good in the 300Hz-and-up realm, where room interaction is less troublesome. But down in the boundary dependent region (below, say, 250Hz), things often do not go as well—there is a tendency for the piano below middle C to get more than a bit mushy, and for the cello and bass sections to become grumbles, with indistinct pitch and articulation. With the Gilmore, bass and midbass lines have much more of the clarity of real life. And the bass is capable of enormous power, too. No dynamic limits here (in anything short of a large auditorium, it would seem).

The Gilmore also has all but unlimited dynamic capacity in the middle and higher frequencies. Designer Mark Gilmore says the planar-magnetic mid/high driver will survive inputs that bring it to being red-hot. In effect, it is indestructible. And the speaker, as a whole, effortlessly reproduces the real dynamics of orchestral music or rock at concert levels (I listened from another room!) without strain or distortion. To hear something like the Dorian organ recording of *Pictures at an Exhibition* reproduced with the power of a real, large-scaled pipe organ is a startling experience. Those of us who have had a lingering relationship with electrostatics will just have to throw up our hands and admit that, sometimes, music really does need a power and majesty that Quads or mini-



monitors simply cannot produce. If you are a fan of rock, or what HP used to call “power music” (the large orchestral repertoire of the late 19th and early 20th centuries), the sheer dynamic scale here will vastly impress.

And it is not just dynamic scale that the Gilmore offers. It also provides, in the right setup, a vast landscape of sound. Its (near) line-source nature gets rid of the first floor reflection and allows the sonic image to float in another space. With the right recordings, a truly convincing soundstage develops. This requires some quite delicate set-up considerations that I shall go into in a moment. But it can work, although you may never hear it in a casual setup listened to quickly, wherein there’s a tendency to hear sound from the planar-magnetics in each channel separately.

The Gilmore can also drive large rooms very well in this regard. At the 2005 T.H.E. Show, a pair of Gilmores were demonstrated in a room larger than almost anyone is likely to have for listening, but the speakers were perfectly happy there, effortlessly filling the space.

Further up the frequency scale, the Gilmore strikes me as a bit of a “work in progress.” This is true in the literal sense: Mark Gilmore is working to improve the ribbons—indeed, during the course of the (extended) review period, I received an updated and improved pair of mid/high planar drivers.

While the current version of the speaker is reasonably well-balanced, there are certain irregularities that may be disturbing to some. For a start, the planar magnetic driver “takes off” somewhat just above the crossover frequency (200Hz). So there is something of a perceived peak around 350Hz, followed by a comparative droop in the crossover region where, in listening terms, the planar-magnetic quits before the bass takes over on the way down. The listening

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effect of this peak is a bit of hollowness in the middle octaves of the piano, and a certain sense of the bass being detached from the mids. Further up, the midrange is a bit recessed and somewhat irregular, and the lower treble is somewhat exposed. Then there is a roll-off in the top octave. According to the manufacturer, the ribbon tops out at 40kHz, but it is not putting out as much energy in the top octave as in the octave below. And the whole top end is quite a bit up and down compared to really flat “monitor” box speakers.

Incidentally, the Gilmore is not quite a true line-source (the

ribbon is only 60 inches high), and there is some change in sound with listening height. Be sure to get your ears precisely on the axis perpendicular to the ribbon at its middle point. This involves either tilting the speaker (not hard—the spikes are adjustable) or sitting in a low chair.

**With everything positioned just so, the tonality was quite natural and the overall scale and superb bass/midbass performance were very convincing.**

In the midrange, behavior is rather more complicated than a simple recession. Planar-magnetic drivers (and true ribbons, as well) inevitably have a “cavity resonance” at some frequency. The Gilmore uses a special kind of double-well construction that splits this single resonance into two separate, smaller resonances. Without this, one is faced with the necessity of using a notch filter to remove the cavity resonance—the approach used in the original Carver Amazing. While this double-well construction does seem to smooth out the response, the Gilmore exhibits a complex kind of interference pattern not very far off axis and a considerable variation in the midrange in all positions, which makes horizontal positioning critical. The effect is not so much on tonal balance (although that can be heard as an overall recession in the mids and some irregularity) as on imaging. One has to position carefully and not move much or the image becomes unstable and the planar-magnetics are heard as separate sound sources. The speakers will disappear if you find the right spot, but the right spot is restricted.

Of course, with greater distance, this effect will diminish. It was not very noticeable in the large room at the show, for example. But in a moderate-sized room, really careful positioning is required.

If the planar-magnetic driver is a work in progress, the Gilmore picture, as a whole, has enormous potential. Aside from the tricky business going on around 1 to 2kHz, the main problem involves frequency-response glitches. So I decided to try reducing the treble return (after the

dip) and removing the 350Hz prominence. I am between TacT units and my Sigtech was down, so I ended up doing this by hand, so to speak. By this method, there is no fixing the complex irregularities in the 1-2kHz vicinity—too complicated and spatially irregular. Even DSP would find it hard to deal with this, since it varies so much with angle.

But the results were promising.

With everything positioned just so, the tonality was quite natural and the overall scale and superb bass/midbass performance were very convincing. About 11 minutes into the first movement of the famous Mercury recording of Byron Janis playing the Rachmaninoff Third Piano Concerto, there is a bit of bottom-to-top playing of the piano gesture. One expects a change in sonic character as the music comes out of the boundary-dependent, lower-frequency range into the direct-arrival, higher frequencies. Here it was, exceptionally, all of one piece, with the bottom as defined as the top. And on Waterlily's *Saltanab*, a recording of Arabian classical music, the plucked instruments had a compelling realism, while the sound reverberated in the acoustic space most convincingly. There really is some magic to planar radiators, in general, and the Gilmore, in particular.

So there you have it. In some areas—bass, dynamic scale and ease, convincing presentation of large music—the Gilmore is at the very edge of state of the art. As large-room-fillers, they are right up there with the big Dynaudio

## Form Follows Function

**T**he Gilmore Model 2 is an example of the “form follows function” school of design—nothing gets in the way of this designer's sonic goals. There are no grills to resonate or vibrate when things get loud, no enclosure to hide the backs of the woofers. On the other hand, in a somewhat techno way, its appearance has a certain charm. It is *big*, though: almost six feet tall, nearly three feet wide, and heavy—185 lbs. or so. This description sounds a bit like the kind of guy you would like to have on your side in a barroom brawl—except, being a true dipole panel, the speaker is only an inch thick. Well, an inch thick except for the backs of the woofers sticking out. And then there is the front side of the metalized woofers. At least the planar-magnetic driver looks discrete.

There isn't going to be any hiding the Model 2, so I think you might as well go for the gusto and choose a really assertive color (the Corian panel can be ordered in any color you like); my review sample was a light gray/blue. If I had my druthers (for review I just took what was readily available), I would go for Adobe, a color that makes a bold statement (check it out on the Web site). You could also order Hot Red, Mandarin Orange, or Sun Yellow—like those cars that light up the road. While the appearance is anything but understated, in the right décor it could be downright ornamental.

If you want a speaker that no one, however indifferent to audio equipment, can possibly overlook or ignore visually, Gilmore Model 2 fits the bill. As the famous Thurber cartoon says, “I think you'll admire its presumption.”

REG

and Wilson models for scale, and, in practice, they will probably have better in-room bass. Moreover, the Gilmore is a lot less expensive. It seems slightly off the wall to call a speaker that costs \$20,000/pair a bargain, but, in this comparison, that's fair enough.

On the other hand, an expensive speaker (even though far from the most expensive around) ought not to have the obvious problems of the Gilmore in terms of horizontal radiation pattern and uniformity of frequency response. And it needs better integration of the ribbon and the bass, as well—a problem that, I suppose, will go away when the rise at the bottom of the ribbon's range is eliminated.

When the planar-magnetic driver gets its difficulties resolved, the Gilmore is likely, in my view, to jump to the front of the pack of speakers, especially

of "large signal" speakers. For now, these difficulties are something one has to weigh against the virtues. With improvements to the planar-magnetic driver, this could be as uncompromised a speaker as has ever existed. So I look forward to the new ribbons and will keep listening. Incidentally, Gilmore will retrofit the new ribbon drivers to existing Model 2s as improvements are made. As they used to say on mono recordings, "You can buy now without fear of obsolescence in the future." &

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## DISTRIBUTOR INFORMATION

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Kalispell, Montana 59904  
(888) 291-8501  
[www.glacieraudio.com](http://www.glacieraudio.com)  
Price: \$19,950

## SPECIFICATIONS

Driver complement: Four 12" woofers, one 60" planar-magnetic driver, dipole operation of all drivers, external passive crossovers

Sensitivity: 91.5dB

Impedance: 8 ohms

Dimensions: 33" x 66" x 1"

Weight: 230 lbs.

## ASSOCIATED EQUIPMENT

Classé DAC and transport; Z Systems PDP digital preamp and EQ device; Marantz DR-17 CD recorder; Pioneer DV-578A; Sony SCD 777 ES SACD player; Bryston BP-25 and Plinius 12 preamps; Bryston 14 B ST, Carver A-760X and AV -500, and Quad 606 power amplifiers; Harbeth Monitor 40 speakers; Dunlavy speaker cables; Promethean interconnects; Townshend Audio Seismic Sinks; Liberty Audiosuite measurement device

# Manufacturer Comments

## Gilmore Model 2 Loudspeaker

**I**ndependent of real-world constraints, the ideal speaker should have no mass and no distortion, be capable of reproducing all frequencies with no variation, be 100% efficient, be capable of infinite sound-pressure levels at all frequencies, and have dispersion characteristics that duplicate the original recorded instruments. Real-world engineering is an exercise in “optimizing compromises” for a design goal. Our goal: to reproduce the live musical experience in the home environment given real-world constraints. This is what we mean by “accuracy.”

In Issue 122 of TAS, Mr. Greene lists his listening biases. Flat frequency response is paramount. He admittedly is willing to put devices in the signal path to accomplish this goal. A comparison of frequency-response performance graphs shows that the Gilmore Model 2 outperforms the vast majority of speakers, including many of the most respected. From our experience, achieving flat frequency response is relatively easy but can only be achieved while sacrificing other performance parameters that are at least as critical. This includes phase accuracy, dynamic range, transient response, low distortion, and a topology that can mimic the line-source-360°-radiating characteristics of real instruments. It is clear that Mr. Greene is quite impressed with the Gilmores in these areas and consequently, in their realism. Coherence, imaging, and soundstage are important also. We are confident that the few “radiation” anomalies that Mr. Greene has noted were due to his choice of speaker placement and positioning and room interactions, rather than inherent flaws. We know of no other speaker that balances all design parameters as well, and as a result mimics the live musical experience as well, also. In this sense, the Gilmores are much more than “a work in progress.” But there is always room for improvement. All three models of Gilmore speakers are conveniently upgradeable and repairable by the user.

**Additional supporting comments:** Our frequency-response measurements, when room interactions are minimized and when taken at the listening position, do not reveal any of the following anomalies described by Mr. Greene (peak at 350Hz, droop in crossover frequency, issues in the 1kHz to 2kHz range). We do reveal a peak around 200Hz, near the crossover point, as a result of the ribbon’s free-air-resonance. This is not related to the interaction of

the state-of-the-art crossover, which does a great job of smoothing out the transition between drivers. While this peak is higher than we would like, it is still quite narrow and from our experience has little sonic signature. Still, we continue to research methodologies that will reduce this effect without unintended negative consequences.

We do not counteract the traditional “well resonances” that characterize planar magnetic drivers as described—by dividing the resonances into two smaller ones. We instead neutralize them through a proprietary differential-structural design involving phase cancellation.

While the use of woofer resonance is effective in counteracting dipole roll-off, the surface area, shape, and mass of the panels are also relevant for enhancing bass performance. Corian provides the critical mass and has allowed us to reduce the system resonance of the panels to a frequency below the audio passband. We know of no other production speaker that has accomplished this.

Our crossover point on the Model 2’s is 200Hz so the ribbons are actually handling upper bass frequencies.

The Model 2 exhibits the textbook radiation pattern of line-source dipoles, e.g. Soundlab, Apogee, MartinLogan. All line sources that do not cover the entire height of the room exhibit some attenuation if you are above or below the wave front. In our listening rooms, we can stand and move off axis without noticeable effect to soundstage.

The ribbon’s top range is specified as 22.5kHz and is resistive from 200Hz to 60kHz. The woofer array has 8-ohm impedance, +/- .5 ohms. Consequently, the Gilmores are extremely amp-friendly.

It is important to follow our recommendations in terms of speaker placement. This eliminates radiation anomalies. Also, our speakers are not designed for near-field listening—same for any line source.

We now offer an optional, removable grille that covers both the ribbon and woofer array. We also have added a precision attenuator to the crossover to adjust the output of the planar-magnetic driver relative to the woofer array in -2dB increments up to -6dB. This helps compensate for very bright rooms or bright recordings and can offset the natural resonance of the ribbon. This is not an equalization technique and has no sonic signature, but just adjusts the relative volumes of the drivers.

We’d like to thank Mr. Greene and TAS for this opportunity and look forward to future reviews of Gilmore products.

**Mark Gilmore and Harry Blazer**