

## Thiel CS7.2 Speakers: Like A Mountain Stream

The Thiel CS7.2 is the flagship of the current Thiel lineup. It is a medium-sized floor-standing model, five-and-a-half feet high and heavy, at 155 pounds per side, but with a relatively small footprint of 14 x 19 inches. Its elegant visual design will enable it to coexist gracefully with living-room décor. In addition, this speaker seems clearly to be an all-out try for sonic quality. The drivers are purpose-built by Thiel, the cabinet, especially its front baffle, is of extraordinary construction, and the whole design is uncompromising in its commitment to sonic excellence. The 7.2 is somewhat unusual among speakers, even big top-of-the-line speakers, in its sheer number of drivers: woofer, passive radiator, lower midrange, upper midrange, and tweeter. The upper mid and tweeter are coaxially mounted. This is not, however, the one-voice-coil mechanically crossed-over coaxial driver used in other Thiel models. It is a coaxially mounted, but separately driven, tweeter, with electrical crossover.

### Why It Needs To Be the Way It Is

The whole thing seems very logical if you start with the premise that designer Jim Thiel has followed from the very beginning of the company: that phase linearity is really important and consequently only first-order, 6-dB-per-octave crossovers will do. Without getting too techno, phase linearity indicates that all frequencies come out synchronized in time in the same way they are at the input. So a complex signal involving many frequencies is not altered as far as the time relationship among the frequencies is concerned. In most speakers, some frequencies are delayed relative to others. The only kind of (analog) crossover that make it possible for a multi-driver speaker to be phase linear is the gentle-slope, 6-dB-per-octave, first-order one. Higher order crossovers, with slopes of 12, 18, 24, or even more dB per octave change the relative timing of the different frequencies to a greater or lesser extent.

Phase linearity seems like a good idea – why would anyone want to smear in time the internal relationships of the different frequencies in a musical sound? But speaker design is a world of compromises, and first-order crossovers impose some restrictions of their own. First, the gentle slopes mean that the drivers have to operate over a quite wide frequency range. If a midrange driver crosses over to a tweeter at 3kHz, say, with a fourth-order, 24-dB-per-octave crossover, then the mid driver is pretty much out of the picture by 6kHz. But with a first-order crossover,

you would have to go up *four* octaves to 48kHz (!!!) to get the same attenuation of the signal to the mid-driver. Effectively, the mid-driver would have to operate cleanly beyond the limits of audibility.

This is a big effect and what it means is that first-order crossovers require crossing over the drivers much sooner than higher-order crossovers. The drivers in the first-order setup are going to have to operate well beyond the crossover frequencies, so you have to cut them some slack about where those crossover frequencies are. Thus, you need exceptional drivers and you are likely to need many of them.

First-order crossovers have the advantage that, if the drivers match in directivity, then the power response, the total radiated power, will be flat – constant with frequency – if the on-axis response is flat. There are no power-response glitches at crossover. But as a driver goes up in frequency, it becomes progressively more directional, and its directivity won't match that of the smaller driver that takes over at higher frequencies. So to capitalize on the flat-power advantage and the resulting smoothness of in-room sound, you need to crossover well before directivity sets in. Once again, the solution is more drivers!

The coaxial unit also makes sense. With first-order crossovers, the operating ranges of the drivers overlap considerably. This is no problem in the lows. The waves are long and the different distances to the different drivers won't amount to much in terms of wavelengths. For example, at 200Hz, the wave is five and a half feet long. A few inches difference in where you are relative to the drivers is not going to amount to anything but a tiny fraction of a wavelength. But at high frequencies, a region of overlap of two drivers separated a bit will cause substantial change in the sound if you, the listener, change position, especially vertically. The different distances from you to the two drivers will cause ups and downs in the response from constructive and destructive interference at different



frequencies. With the coaxial driver, in which two drivers are in effect in the same place, this “lobing” effect goes away. Since the drivers are in the same spot, you are *always* the same distance from the two of them!

So when you look at the 7.2s, you are looking at a neat solution to the problem of how to build a full-range phase-linear speaker. There are other approaches, such as Dunleavy’s doubled-driver configuration where all drivers except the tweeter appear in up/down symmetric pairs. But the 7.2s are clearly a natural, logical way to deal with the first-order situation without doubled drivers. (Incidentally, these explanations are my own.)

### What Goes Right

The 7.2s do some things superbly well, some well almost beyond comparison. The 7.2s are not the only speakers available nowadays that offer a highly inert front baffle; the Mordaunt-Short Performance series has this as a feature, for example. But the 7.2s push this idea about as far as it can go. Moreover, the curved shape of the baffle seems to minimize diffraction effects quite well and makes the speaker “disappear.” The combined effect is a box speaker that sounds extraordinarily unboxy in the audiophile sense and also does a convincing job of stereo imaging, of floating a “soundstage” that is detached from the boxes themselves.

The inertness of the baffle and of the cabinet as a whole combines with the low distortion and lack of breakup of the drivers to produce clean sound with an unusually low level of added noise over almost all the frequency range. All speakers add some background noise from cabinet flexing and driver misbehavior, but the Thiels add much less than almost any others. This is the speaker analog of the “black background” of really quiet electronics. As source material and amplification acquire really high signal-to-noise ratios, it becomes more useful to have this kind of ratio in speakers, too. The Thiel drivers are not utterly free of materials-based coloration. I think a keeneared listener would guess that the drivers were made of aluminum without looking. But this is a subtle effect, and the drivers and the speaker as a whole do offer a surprising level of quietness and black background in the sense indicated. This gives real transparency and it also enhances the perception of dynamics. With an adequate amplifier – the 7.2s like current; forget most tube amps – the speakers give a realistic feeling of dynamic liveliness. The feeling of full dynamics is further enhanced by the truly full range of the speaker. The desired bottom-end extension seems nowadays ever to deepen. We are well on our way to wanting to reproduce seismic tremors. (Those of us who live in Los Angeles get plenty of live comparisons!) But for any purely musical experience, the 7.2s’ bass limit of -3dB anechoically at 23Hz will fully suffice. This is one speaker that does not need a subwoofer.

### What Goes Wrong

The 7.2s do so many things well – clarity, low distortion and noise, high transparency, full frequency

extension, lively dynamics, unboxiness and excellent imaging – that many audiophiles will say “Enough!” – and be happy. Some audiophile reviewers have already done so. But the 7.2s are not devoid of problems. They are two categories: first, the things wrong intrinsically; second, those that have to do with listening-room interaction.

To start with, the Thiels do not have as sweet and smooth a top-end response as the best available today, being, by comparison, a bit peaky and splashy. The SEAS Excel tweeter is considerably superior, and so is the JBL coated titanium tweeter in their moderately priced LSR 38 monitor, to mention two speakers I have on hand at the moment. The 7.2s are expensive and it seems to me that they should be offering treble performance comparable to the best. I do appreciate the advantage of the coaxial design in the context of insisting on phase linearity. But phase linearity in the high frequencies is, to my mind, a marginal consideration compared to smoothness, and one wonders if the game is worth the candle. Thiel claims to have solved the problems of tweeter loading that have plagued many other coaxial drivers. But for whatever reason, the treble here is problematic.

A second problem is also intrinsic to the design. While the coaxial unit eliminates lobing in the upper frequencies, the 7.2s are still quite variable in sound according to vertical listener position and off-axis behavior horizontally also seems complex. Now, stereo works correctly only for a centered listener, and serious listening means sitting still. Even so, the vertical variability creates, even for a stationary listener, a certain unnaturalness. “Live” single sound sources are not built out of many separate pieces added together in a way that changes abruptly with head movements. Of course all multi-driver speakers have this problem to some extent. But the 7.2s have it more than many.

Finally we come to questions having to do with the speaker/room interaction and the overall perceived balance. Some rooms are badly problematical, and all rooms operate on and alter the anechoic sound of speakers. But, to my mind, a good speaker must be designed to deal with these room interactions in some plausible way, even though it cannot be perfect for all rooms. The 7.2s have some difficulties here. To begin with, there is the question of bass/midbass/lower midrange performance. The 7.2s exhibited depressed response in the 125-250Hz octave in my room. This is the range where the well-known Allison effect would apply for a woofer two feet from the floor, although I cannot be sure that is the explanation here.

The classic approach to this problem is either to place the bass driver near the floor or, if the driver is farther off the floor, to place the speaker itself close enough to a back or side wall to fill in the cancellation. The 7.2s are already a little bit leaned out by nature in this potential cancellation region. On the other hand, the bass further down is strong and not rolled off, so if you give the speaker considerable proximity to a wall, the bass will be overly strong. I simply could not get the 7.2s away from a big-bottom/lean-further-up balance. This leaning out was

exacerbated by the general rising character of the speaker's balance. The lower treble is irregular but overall it tends to have somewhat more energy than the lower midrange.

I have noted this phenomenon in other speakers I've reviewed, which might lead to speculation that there is a problem with my listening room or with where I place speakers. But this is not the case. To take as examples speakers I own or have had on hand recently for review: the floor-standing Dali Grands, roughly the size of the 7.2s, produce via a double-woofer arrangement a control of the floor loading and a smooth, flat, in-room response almost automatically, without much fussiness about placement. The box-on-stand Harbeth Monitor 40s need a bit more care in placement, but also produce a smooth, flat in-room response in the right spot. So do the JBL LSR 38 monitors and the Gradient 1.3s. All these speakers are considerably less expensive than the 7.2s; the JBL and Gradient models are about one-fifth the price of the Thiel (the Gradient model is no longer available). All can be set up to produce a much less troublesome interaction with my room, and all produce a much better balanced sound.

The comparison with the Dali Grands is particularly appropriate; they too are floor-standers of moderate size with multiple drivers. They are not yet available in the US, but their projected retail here is around \$5,000/pair. To my ears, they are a much better speaker than the 7.2s (so are the Harbeth Monitor 40s, but they are, as it were, a different species, not being floor-standers).

I am well aware that Thiel speakers have a reputation for flat response. And except for some treble irregularities, the manufacturer's measurements show the 7.2s as quite flat, anechoically, except for a slightly rising trend. To the extent that I can do such measurements (limited to higher frequencies, since I do not have an anechoic chamber), I confirmed this. But anechoic flat is not flat in-room. And it is in-room response that you hear below 500Hz. (Above that frequency range, the response heard has a more complex relationship to the combination of direct and reflected sound.) In addition to the room interaction question, the slightly rising trend is just the opposite of what is usually considered appropriate on musical and engineering grounds. Some people even go so far as to suggest a 1dB/octave taper in power response (total radiated energy) from bottom to top. While I believe that that is excessive and that something like a total drop of 2-4dB is more reasonable, the idea of having a gradual rise seems to me inconsistent with the way recordings are made, even relatively distant ones, especially in a situation where some significant portion of the lower midrange is going to be erased by the room effects, or at least severely diminished, as it was in my room.

Anyone who doubts that the effects I heard can arise from a speaker with response as nearly flat as that expected from a Thiel speaker is invited to take a look at John Atkinson's in-room measurements of the Thiel CS 6 in the March 1998 *Stereophile*. While it is a positive review, the measurements tell a story: You will see there the bass boom, the upper

bass/lower midrange depression, the exaggerated lower treble that I have mentioned. This is a different Thiel model. Moreover, I formed my own impressions of the 7.2s before reading that review. But it shows that the effects I am describing are conceivable, and can happen in other rooms than mine.

### The Overall Situation

The 7.2 seems to me a combination of new and old audiophile values. On the one hand, its quiet background characteristic, hard to achieve, and seldom achieved so well as here, is exactly what is needed to appreciate contemporary digital source material in the form of improvements in CD and also the new digital standards now appearing. This characteristic has always been desirable, but it is now more important than before. (A quiet background in speakers and electronics is less important if the source material is full of noise. And conversely when low-noise source material becomes available, then the virtues of quiet electronics and low-noise speakers are revealed and made important.) In this sense, the 7.2s, with their quiet drivers and extraordinarily dead front baffle, are an up-to-the-minute design.

But in other ways, the 7.2s seem oddly dated, pursuing audio values of by-gone days. When High End started back in the Seventies, clarity in source material was a rare thing. Audiophile recordings then tended to emphasize close-miked immediacy and spectacular dynamic effects. (Remember Sheffield?) And given that the bulk of non-audiophile records lacked any clarity at all, people were willing to pursue enhancement of perceived clarity at the price of wrong tonal balance. Rising-top moving-coil cartridges and speakers like the ProAc Tablette, whose top end took off like an airplane, were the order of the day.

Times change. Dynamics are easy on a CD, and clarity is taken for granted. Flat top end is completely automatic from a CD player up to 20kHz; with 96/24, flatness to a little short of 48kHz is similarly automatic. Contemporary speakers really have no excuse for an exaggerated upper midrange or treble.

The 7.2s owner's manual contains a conspicuous statement that Thiel speakers are designed to be accurate rather than to "romanticize" music. Fair enough – accuracy is what serious audio is about. But the trouble is that the 7.2s are in fact not so accurate, to my ears, in one of the most basic of sonic param-

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Recommended Power: 100 - 500 watts  
Warranty: Ten years, parts and labor  
Price: \$13,500/pair

#### ASSOCIATED EQUIPMENT

Bryston 3B ST and Sunfire Signature amplifiers;  
Bryston BP-25 preamp;  
Z-Systems RDP-1 digital preamplifier;  
Classé Audio CD transport and DAC

ters, the very one that dominates the perception of how a speaker “sounds,” namely its perceived tonal balance. They not only do not romanticize music, they actively *de-romanticize* it, with their excess in the upper ranges and in-room deficient lower mid/upper bass. Part of this might be an effect specific to my room. But many speakers have not had such problems in my room, and it is hard for me to believe that the problem is not in good part intrinsic to the 7.2s. For certain kinds of music, where transparency is an over-riding musical value (certain kinds of rock, perhaps), the 7.2s may be unbeatable. Where they are good, they are very very good. But when tonal values are important, when the natural reproduction of the human voice and of musical instruments in tonal terms is important, the de-romanticizing takes its toll, and only a hair-shirt audiophile of the old school will be happy (to borrow a phrase from Dan Meinwald of EAR USA, used in another context).

In the contemporary world, speakers can have the transparency of a snow-melt mountain stream without its coldness. The 7.2s have the former. But to my ears they have far too much of the latter as well.

ROBERT E. GREENE

*The manufacturer was sent the review and declined to comment.*

#### **Mike Kuller Comments:**

After reading REG's review of the CS7.2, it sounds to me as if he found his mountain stream half-empty. Over the years, the esteemed Dr. Greene and I have commented on each other's reviews on numerous occasions. We have generally been in agreement about what each of us has heard, and when we have differed, it has been primarily about how we viewed the importance of what we heard in the larger scheme of things. In this case, I find we are in agreement about all of the things the CS7.2 does right, and it is quite a list.<sup>1</sup>

Yes, the clarity and dynamics REG speaks of are there; the speakers sound faster and cleaner than the CS7s, more transparent, and the bass, especially the midbass (one of the weaknesses in the 7s<sup>3</sup>), is much improved. There is better low frequency definition now and more midbass dynamic punch. More importantly, the speakers are now easier to drive and a little more efficient. Actually, I would characterize the CS7.2s as sounding more like the CS2.3s than the old CS7s since the crossover and all of drivers are new and similar to those in the 2.3.

So what about the things REG found that he didn't like in the loudspeaker? Like REG, I also hear a very slight “aluminum” coloration that I notice in the midbass driver, but it would seem to be diminishing as the speakers break in further. This makes me wonder if his pair were completely broken in.

REG's biggest problem with the CS7.2 was a tonal balance that he found tilted toward the high frequencies. He noted an excess in the upper midrange and a deficiency in the lower midrange and upper bass.<sup>3</sup> Any loudspeaker with the upper frequency energy and the resolution of the CS7.2s can

sound bright with the wrong associated equipment and cables or in a reverberant, untreated room. (I noted that REG used only solid-state electronics with the Thiels.) Where their tilted tonal balance made the CS7.2s unacceptable to REG, I find them to be very musical, yet revealing, and can overlook the small deviations in their frequency response. For me the mountain stream is as clear, but fuller and warmer. I would agree with him, though, the speakers do have a tendency toward brightness, but this can be ameliorated to a great extent by the choice of associated equipment.

For example, I first listened to the speakers with the Conrad-Johnson Sonograph SA-400, a pretty smooth-sounding solid-state amp. Coupled with the CS7.2s, the sound was a little bright and somewhat anemic in the “warmth” region. “De-romanticized” would indeed be a good description. The sound was cool and a little uninvolved as your attention was drawn to the upper midrange. I pulled out a CD with test tones and my Radio Shack Sound Level Meter and measured a peak at 4kHz and a suck-out at 250Hz at the listening spot (about 10 feet away from the speakers, which were well away from the walls). This pretty much confirmed what I was hearing and what REG described.

Then I switched to the Manley Reference 240/100 tubed mono amps (which I had liked with the CS7s). The sound became much more balanced and musical. The Sound Level Meter still measured the peak and dip at the same frequencies, but now they were less than half of what they had measured before and much less audible. Gone was the brightness and instead there was more warmth and a much more natural tonal balance. I have listened to numerous recordings that highlight various acoustic instruments, orchestral sections, and vocalists, and I can find nothing to criticize in the tonal balance now. This is the most advanced all-dynamic driver speaker system I have heard. It now provides a sound I could easily live with - and enjoy.

As with any High End loudspeaker, care must be taken in matching the CS7.2 to an amplifier to get the most out of it.\* This is a speaker that will not do well with icy solid-state amps. (I'm sure there are some solid-state amps that would be a better match and not highlight the frequency response variations.) The CS7.2 can sound truly excellent with the right associated equipment, but you must consider whether you have the patience and perseverance to work to get the most out of them. If so, you will be rewarded with a great-sounding loudspeaker, one that, as REG puts it, “does some things superbly well, some well almost beyond comparison.”

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<sup>1</sup> To get my own bias out of the way, I own a pair of CS7.2s, having updated my CS7s a few months ago. The conversion took a friend and me about four hours on a Sunday afternoon. The kit and instructions are well thought out and it was a relatively easy job. The speakers have about 225 hours on them now and I expect that their sound will improve as they continue to break in over the next 100 hours or so, if they're anything like the CS7s.

<sup>2</sup> See my and HP's reviews in Issue 110.

<sup>3</sup> I'm still trying to figure out his comment about the CS7.2s being unbeatable on rock “where transparency is an overriding musical value.” The last thing I want with the average rock CD is a bright-sounding speaker.

\* As HP concluded in his review of the CS7.

### *Tom Miiller Comments:*

There are few people in audio whom I respect more than REG and Jim Thiel. Thus, commenting on REG's somewhat critical review of Thiel's flagship is a daunting task. Somehow or another, someone's toes are going to feel stepped upon. But in audio reviewing, there's only one way to go – call 'em like you hear 'em.

On the whole, I find REG's review (which I read after listening to the speakers, and just a few hours before writing this comment) to be accurate in its assessment of sound. I would characterize the sound I heard somewhat differently, just because I have a different way of talking about these things.

First, the positive attributes mentioned by REG are all in abundant evidence. Further, in my room I did not have a problem with the overall balance of the sound, particularly in the treble. It is apparent that REG found the spectral balance tipped a shade toward the treble; I did not and I suspect the difference can be attributed to our rooms. My room is sizable, with a cubic volume of slightly more than 8,000 feet (likewise, the Thiel reference room in Kentucky is big – approximately 11,000 cubic feet). Since air is resistive, especially to higher frequencies, it is likely that the additional space in my set-up offered a more complementary environment for the 7.2. Regardless of the reason, the treble was well balanced relative to the speaker's lower frequencies.

Balance is the attribute of the 7.2 that I was most interested in. I have never been completely comfortable with the large Thiel efforts in the past, in part because whenever I heard them (never in my own room), I did not think they were tonally seamless. There seemed to be changes in character across the audible bandwidth. For this reason, I strongly favored the smaller Thiels, such as the CS1.5, which are extremely coherent.

The 7.2 is, to me, quite an improvement over previous big Thiels in terms of balance. There is an excellent sense of coherence in spectral balance, except for some aberrations at each extreme. Through the heart of the music, I found the 7.2 of one cloth and quite enjoyable. I might add that the 7.2 also did not demand the behemoth, current-swinging amplifiers that its predecessors did. It was quite comfortable with both the BEL 1001 Mk IV (in both 50-watt and 200-watt configurations) and the Conrad-Johnson MF-5600 (using just two channels – 120 watts each – of this wonderful five-channel amp).

Despite the good treble balance, I still found reason for complaint in the speaker's treble performance. I can find no better way of describing this than to say it was discontinuous. It was almost as if there were some peculiar lobing effects that masked portions of the treble. Consequently, on predominantly high instruments, cymbals, for example, that were not prominent in the mix, I could hear the transient attack, but parts of the sound seemed to wink out, leaving other parts behind. The net effect was to undermine the illusion that a real cymbal was the source of the sound. Overall, this effect disrupted the contributions of percussion instruments mixed in at lower amplitude. When, however, a cymbal was right

up front in the mix, such as in the first track of the *Conspiracy Theory* soundtrack, this discontinuous characteristic was not noticeable.

The overall character of the Thiel 7.2 is, as REG's review suggests, a little detached or remote. It is a more intellectual presentation than romantic. But sometimes music is romantic, and I didn't find that the Thiel properly conveyed that kind of richness and sweep. This relates, perhaps, to the speaker's way with timbres. The 7.2 does a wonderful job of separating the sounds of different instruments – I never questioned the identity of a stringed instrument, for example – but nevertheless places a signature on the timbre of all instruments. Put simply, the timbres are not fully saturated in color. This isn't richness, as in lower midrange warmth, that I am talking about. Rather, all instrumental timbres are not as full-bodied as they should be and they do not project their sound with great authority. Thus, the rather detached character.

To some degree, this characteristic can be overcome by "standing on the pedal." No question, this is a traditional big Thiel in that it loves to be turned up. Timbres actually wash out at low levels (perhaps from mass masking of the drivers, but that is only a guess).

Finally, the lowest bass is not a match for the rest of the speaker. The 7.2 goes quite low, below 30Hz, certainly, but its character tends toward thickness in contrast to the rest of the speaker which has more of a quick, open character. Since the 50-60Hz and up region shares the character of the rest of the speaker, it makes the 7.2 a wonderful candidate for a true sub-woofer (below 40Hz). My best results actually came when I crossed the 7.2 over to the Linn AV5150 subwoofer at 40Hz. This established a top-to-bottom spectral coherence that made the speaker less obvious sounding.

There is an important note of caution here. On one (and only one) piece of music – track 6 of *The Thin Red Line* soundtrack – I could hear a rattle emanating from the woofers (both channels). I contacted Thiel and they could not replicate the condition in their listening room with the same music. Since it is possible that something went awry in the shipping of the 7.2 from REG to me, Thiel sent me a new set of woofers to install. For reasons that are no fault of Thiel's, the woofers arrived too late for me to install them in time for this comment. Since I also noticed this rattle, greatly reduced, when the Linn subwoofer was in use, I suspect that the woofers are off-color, so to speak. Thus, I will install the woofers and report the results in the next issue. Obviously, my observations about the bass must be provisional until I listen to the replacement drivers.

Criticisms aside, the Thiel CS7.2 is a serious effort and an enjoyable speaker. The problems we're talking about here do not fall into the "fatally flawed" category (to quote an old controversial TAS review). Rather, they are problems that each listener will have to assess against the numerous strengths of the CS7.2. For me, personally, this speaker would be a tough sell. I like more tonal weight. For another listener, the open and clear character might more than offset what I miss. The speaker demands a listen. 