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## Arnis Balgalvis

**C**HARLES HANSEN, Ayre's main man, is one very versatile designer. He belongs to that select group of individuals who are equally at home with loudspeakers, as well as with analog and digital circuitry. Now, that's certainly something to write home about.

Hansen is the one who first put Avalon on the map with the Ascent loudspeaker and later did them proud with the Eclipse loudspeaker, a piece of gear which was immediately given high ratings even before magazine reviews appeared. Some time after that he started Ayre and proceeded to intrigue the high-end community with innovative and well-regarded preamps and power amps. For many people, such achievements would be enough, but not for Hansen. His next move was into the digital world where he came up with the Ayre D-1x, their top-of-the-line, \$8000+ CD/DVD player. Though other designers have had a few years to catch up, many still regard the D-1x as *the* audio/video standard.

Consequently, when Hansen told me about his CX-7 CD player, my ears perked up. Ayre products have been consistently well received in the marketplace because they give the firm's customer very solid performance at very reasonable price points. Based on this track record, I simply had to pay attention. And when the CX-7's \$2950 price was mentioned, my interest really piqued.

### The Long and Short of It

The CX-7 is a handsome, single-box CD player. It has a two-tone, brushed-aluminum finish with a centrally located drawer and display on the front panel. By rounding the corners and the edges of the front panel, a clean, functional appearance is created. This styling is right along the lines of the rest of the new Ayre products including the AX-7 integrated amplifier, K-5x preamp, and the V-5x power amp.

The CD tray is located below a display which shows the track number, total disc time or time for the

track, and various symbols to indicate function status, e.g. "Repeat" mode. A welcome feature for me is the ability to turn the display completely off, a handy convenience when listening in dark or low-light conditions. On the right of the tray/display position, arranged in two columns of four, you find a set of eight rectangular push buttons that control the player. The remote control makes these tasks easier from your listening chair by offering most of these functions.

The rear panel reveals some welcome functional conveniences. Besides the analog outputs, appearing in balanced XLR and RCA modes, Ayre provides an AES/EBU digital audio output. After buffering and reclocking, this transformer-coupled output allows the CX-7 to be used as a pure transport to feed an external DAC or digital recording device. A rear panel switch will disable the digital audio output when not in use. In addition, there is a small two-position switch located next to the analog outputs, labeled

“Listen” and “Measure.” Here the user has a choice to select between two algorithms for the digital filter. The “Listen” position gives greater accuracy in the time domain, while the “Measure” position results in more accurate frequency-domain performance. I found that for my listening sessions the switch ended up in the “Listen” position.

With a weight of 25 pounds, the CX-7 is a rather hefty CD player. Being curious about the significant weight of the CX-7, I removed the top cover for a peek inside. OK, just as I expected! Two huge power transformers were there, located just slightly off center, toward one side of the player.

I can assure you that, having designed a power supply or two in my days as an engineer, that at the rated 40 watts of power consumption of the CX-7, these transformers are working without breaking a sweat. Over-kill in the power supply area has always been a welcome idea and it is sure good to see that Hansen chose to go with an all-out approach here.

Another welcome sight was the transport, a CD-ROM mechanism sourced from TEAC. This company’s Esoteric division is considered by many to be the leader in the transport field because of their work in creating and supplying the fabulously well-performing VRDS CD transports implemented in the highly regarded transport designs by Spectral and Wadia. Esoteric also recently introduced their own transport component, the P-70 along with a companion DAC, the D-70.

Technically, the CX-7 incorporates a number of uniquely sophisticated ideas. First off, Ayre designed and implemented their own clock circuit in order to more closely control the numerous parameters that affect clock jitter. Here’s a small sample of what was considered: Crystal quality and loading, gain and bandwidth of the oscillator circuit, the printed circuit board layout, and the attributes of the power supply. Using a “store bought” sub-assembly would have compromised the low clock jitter that most think is essential for producing great sound.

Next comes the digital filtering. As is the case in numerous up-sampling designs today, the first digital filter in the Ayre player up-samples

the 44.1-kHz data to 176.4 kHz. But there’s more. First of all, Hansen emphasized to me, that this is a synchronous filter since it takes the 44.1 kHz to 176.4 kHz, which is an even multiple of four. This approach is better sounding than the very

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commonly found asynchronous filters which take the 44.1-kHz rate and up-samples it to 96 kHz or even to 192 kHz where again the multiple is not an even number. In the CX-7 design, Hansen continues by using a second digital filter and over-samples that output by a factor of 8x, taking the up-sampled 176.4 kHz to 1.4112 MHz. As a result, at this very high frequency, the reconstruction filter is very gentle, and this results in exceptional transient response.

For the critical digital-to-analog conversion process, Hansen chose a Burr-Brown PCM1738 DAC chip. This 24-bit component uses a resistor-ladder array to convert the upper six bits, while the remaining 18 bits are converted with a five-level Sigma-Delta technique at 11.2896 MHz.

For the next step, the I/V or current-to-voltage conversion, an Analog Devices AD844, a 2000 V/microsecond op-amp, is used. Even though this is an op-amp chip, one which was originally intended to be implemented with negative feedback around it, Hansen configured in each channel a pair of these

AD844 devices in a proprietary design that avoids any application of negative feedback. Finally, for the audio output stages of the CX-7, two more AD844 chips per channel are implemented in a direct-coupled topology. Hansen, very proudly, pronounces the circuitry of the CX-7 to be completely without feedback of any sort. Further, not only is there no voltage feedback, Hansen says this circuitry also has no current feedback. He further emphasizes that this topology is direct coupled (i.e.

without any coupling capacitors) and does not rely on any d.c.-servo techniques.

### Setting Up

Thankfully, the CX-7 is not a fussy component setup-wise. Which is as it should be, even for the advanced audiophile. Such a characteristic simply makes life that much more simple. However, the CX-7 does need a fair amount of playing time initially before it comes into its own. I’m talking a good couple of hundred hours here. So don’t rush to judgment too early. Since it sounds decent enough in the early stages of this process, the period can be put to good use listening to music.

I always like to experiment with supports for any component, but in the case of CD transports and players, such trials seem mandatory. I suggest you try different cones, pucks, or perhaps the more sophisticated accessories. Unfortunately, I cannot give you a definitive answer about what will work best with the CX-7 because the individual conditions for each set-up vary all over the place.



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But, as I mentioned, the CX-7 is not too demanding. It settled in very comfortably on my normal equipment rack without any problems. I got very good results using Ayre's myrtle wood blocks for support pieces. I would certainly suggest having these pieces on hand because I am not aware of another less expensive tweak in audio – the Ayre myrtle wood blocks have a list price of \$5 each!

I have become convinced that balanced connections are the best way to go, what with all the r.f.i. that's permeating all over the place due to cell phones, cordless phones, short wave communications, and satellite TV, not to mention the old standards such as AM and FM radio. Hence, I used the CX-7 predominantly with balanced interconnects from TARA Labs. For some time now, I have come to really enjoy the cables from TARA Labs. Their "ISM Onboard The 0.8" interconnects are superbly transparent, spectrally evenhanded, and exhibit exceptional transient performance. The TARA Labs "ISM Onboard The 0.8" is a component that, to me, is more neutral and revealing than any other cable that I have used in my system.

### The Sound of Music

The CX-7 ranks as one of the most satisfying components I have experienced. That's not to say it has the best bass or the best highs or the best staging. That's not what the CX-7 is about. Where this player excels is in the fulfillment area. This thing is just so satisfying. No, not "satisfactory". That implies being *just* good enough. What I'm referring to

is being able to go to your system, feed the CX-7 a nice CD, sit back and enjoy the music. I'm talking gratification and contentment here.

In my case, the only interruption in this serenity was the requirement to change the CD. Otherwise it was a treat all the way – as in exceptionally smooth spectral balance, wide open stage, compelling transparency, riveting focus, and endlessly involving tone colors. The sound I experienced was inviting. And involving. And enjoyable.

The CX-7 will not bring attention to itself with a barrage of stunning aspects of performance. Its nature is not to flash brash attention-grabbing bursts of brilliance.

Instead, the CX-7 will draw you in, for keeps, time after time. This is a long-term affair here and not some one-night stand. What we have here is a real ability to communicate all the essential aspects of music without any sense of being short-changed.

I will not say that it is the best CD player on the planet. I have on hand a couple all-out playback systems including the EMM Labs SACD-1000 (modified) and their DAC-6 set-up, as well as the Teac D-70 and T-70 DAC and transport tandem. Each of these playback systems will set you back \$10,000 plus. And they do outperform the \$3000 CX-7. But where one might consider the CX-7 to be a benchmark is in the value area. With those expensive players, we are well into the price range where an increase in dollars spent does not result in a commensurate increase in performance. We are well beyond that "knee" where we have

to spend more and more for smaller sonic achievements. With the CX-7 in particular, I believe, we are still very solidly on the linear section of the value curve, and thus, its performance is very reasonable for the level of expenditure.

A word of advice when shopping and listening: Do not, for once, succumb to endless comparison sessions. Instead, just sit down and listen only to the CX-7 and do that for extended periods using some of your favorite music. It is in these conditions the CX-7 will shine.

Let me present to you a CD from the XRCD series from JVC, and first, let me say that if you are looking for a consistently great technical execution, this series – in particular, the latest ones from XRCD24 group – is in my experience, the most consistent label to give you such truly advanced presentations. And that's in addition to the very great variety of musical selections, both jazz and classical, and their outstanding performances and conducting.

I chose Richard Strauss' *Also Sprach Zarathustra*, with the Chicago Symphony lead by Fritz Reiner, JMCXR-0011. Here the string sections come across as exceptionally melodious, melding to resonate in a choir-like manner. The sound was massively spacious and exceptionally dynamic. The dramatic ebbs and flows of the music are eminently convincing due to the clarity of the presentation. The CX-7 appears to put the emphasis on the whole of the composition without short-changing any individual details. The instruments appear very carefully integrated to convey the sense of the ensemble. And, guess what? Before I knew it, I was INVOLVED.

The Four Seasons by Antonio Vivaldi (BIS CD-275) was next. Here the rich and refined bass, along with excellent definition, supplied an earnest foundation to the performance. The stage was wide and vivid, and remained steadfastly unflappable with prominent positioning of instruments. When things get going in the full-tilt sections, the situation does not get overwhelming and remains very controlled. There's an appealing sense of restraint – the idea of elegant comes to mind – reminiscent of a live performance. While there's a hint of a feeling that spectrally there could be more extension, the dynamics do

## NOTES

**Ayre CX7 Compact Disc Player**, \$2,950. Ayre Acoustics, 2300 Central Ave., Boulder, CO 80301; phone 303/442-7300, fax 303/442-7301; info@ayre.com; www.ayre.com.

### Associated Equipment

Spectral SDR-3000 Transport, SDR-2000 Pro Processor, Teac T-70 Transport and D-70 DAC, EMM Labs modified Philips SCDA-1000 player and EMM Labs DAC-6 SCDA and PCM D-to-A Processor, Jeff Rowland Design Group Synergy Ili preamp and Model 12 monoblock power amps, interconnects TARA Labs ISM Onboard The 0.8, and The Omega Speaker wire, Avalon Acoustics Eidolon Loudspeakers, Echobuster and ASC Tube Traps room treatment.

not appear to be compressed during numerous displays of exuberance. The profusion of detail is an absolute delight.

And now, musically that is, for something completely different. This next CD comes from the group Black Light Syndrome formed by Terry Bozio, Tony Levin, and Steve Stevens; the CD has the same title and is from Magna Carta as MA-9019-2. For some real fun try cut 3. This dynamic blockbuster came across in all of its intended glory. These guys slam, bang and pluck seemingly everything within reach.

I have heard this CD on numerous systems, but I am still impressed by just how deeply I was involved with the music reproduction on the CX-7. I enjoyed this cacophony from beginning to end. This is one of those CDs that will be thoroughly punishing if the system falters. The CX-7, however, was absolutely marvelous at unraveling the essential pieces of this musical puzzle, to come up with an exceptionally satisfactory solution. The resolution exhibited is of a very high order. No matter how you look at it, be it speed, space, or dynamics, the CX-7 produced an exceedingly involving replica of the specific sonic event.

### **The Finale**

I could go on raving about the CX-7, but I could probably add very little of real worth to what I have already conveyed to you. The bottom line is that the CX-7 is an absolutely delightful product; my experience

with the Ayre unit has been eminently enjoyable. Its charming musical manner won me over and had me thoroughly captivated.

I therefore conclude that the Ayre CX-7 does its intended job in a stellar manner, far and away better than I had previously expected any \$3000 product to perform.

No matter how I look at it, I come back to the exceptional talents of Charles Hansen. To me, the Ayre CX-7 proved that all Compact Disc players which up-sample or over-sample are not the same, they are not created equal. Not by a long shot. Up-sampling and over-sampling theory and design are not the heart of this matter. That's because there are, obviously, digital methods, and then there are analog methods.

Digital equipment will be only as good as the associated analog execution in each case. No matter how sophisticated the digital designs and techniques may be, if the associated analog sections are not up to the task of revealing the merits of the digital portions, then all that digital work is for naught.

In the beginning of the review I said: Charles Hansen knows digital and he knows analog. Well, the CX-7 proves that in spades. I urge you to seek out a dealer for the Ayre CX-7 and listen for yourself. The CX-7 has my highest recommendation.

How high? Well, Charles, the check is in the mail! That way I'm sure that no one can take my CX-7 away from me.