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Jeff Rowland Design Group • Aeris Digital-to-Analog Converter

" . . .a step beyond the medium and the recording, a step closer to the musical performance itself."

by [Roy Gregory](#) | February 26, 2013

It's not so long ago that one-box disc replay solutions were king and the DAC was an endangered species. The cumulative cost and complication of multi-box CD players can quickly outrun the benefits unless the design and engineering are spot-on. First off, you've got all those additional interfaces to deal with, impedance-critical connections where the cable used is outside the control of the system designer. Throw in the cost of those cables, plus multiple power cords, additional distribution and shelf space, and if you take those issues seriously (and you should) the additional infrastructure required simply to accommodate a multi-box CD player can outweigh the cost of the player itself. Think I'm exaggerating? Let's look at a real-life example: Chris Thomas uses the four-box dCS Paganini transport, DAC, upsampler and clock. That needs multiple digital leads, three BNC clock cables and four power cords. Chris uses Nordost Odin throughout. Now do the sums -- and throw in a four-shelf Stillpoints ESS rack as well -- and you'll see what I mean. Apply those same standards to dCS's new flagship Vivaldi system and you are looking at an eye-watering cost of £129,630 just for the cables. That's a sum that dwarfs the cost of the player itself.

Price: \$9800.

Warranty: Five years parts and labor.

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Okay, so this is an extreme example, but even with more modest cabling and supports, the multiple leads and sheer amount of real estate required add a pretty hefty chunk to the cost of ownership. The bigger, better and more complex the player, the more critical all of these issues become. All of which makes the attraction of a high-quality one-box solution pretty clear: most of the sound, minimal fuss and bother and a fraction of the price. Of course, the caveat lies in that first qualification. Done properly (inside and out), multi-box systems promised better performance; the problem occurred in actually realizing that promise.

Since those days, the digital landscape has changed dramatically, both in terms of the way we use digitally stored music and the way we integrate digital equipment into our systems. All of a sudden DACs are back -- bigger, better and much more important than before. Not only are they taking over many of the control and switching functions that used to be the exclusive preserve of the line stage or preamp, they're eroding its role as interface to the system's power amp(s). The rise of file-based storage systems for digital music, the advent of server and streaming replay solutions, the proliferation of portable digital music sources all have contributed to the creation of the requirement for a digital clearinghouse, functionality that can readily be built into a DAC. Add a decent volume control and the capability to really drive cables and the input stage of a power amp *et voila*, suddenly the DAC has been transformed, Cinderella-like, from a

costly, complicated and unnecessary extravagance into a space-saving, cost-cutting, do-it-all digital solution that enables you to dispense with that expensive preamp altogether -- just so long as you don't need to service analog sources anymore.

Why the lengthy preamble? Because Jeff Rowland's Aeris DAC represents just such a product, but more than that, it is just such a product from a company that traditionally excels in exactly the area (analog preamplification) that is apparently under threat. If the traditional line stage is to go the way of the dodo, then whatever replaces it faces quite a challenge, especially given that the line stage possibly plays the most underappreciated role in audio understanding. Any successful DAC-based solution has to meet a host of digital challenges, offer a user-friendly interface and also deliver first-rate analog engineering in a field where even the specialists often fail.

Like so many things in audio, what should be simple in theory proves to be anything but in practice. Digital-data transfer isn't the simple exercise so many people suggest, with termination standards and the tolerance of digital cables presenting serious issues. The advent of new digital interfaces (USB and HDMI, let alone the likes of Thunderbolt) comes with its own challenges and learning curve, while there's still a lot to learn in the processing of simple 16-bit/44.1kHz data. Increasing resolution and higher bit rates are held aloft as the route to audio salvation, yet in reality the jury is still definitely out on whether high-res recordings are actually musically superior to Red Book CD. One listen to [Glass CD](#) should convince you that maybe there isn't that much wrong with the Red Book digital format, and that many of CD's flaws are based in its physical form rather than digital deficiencies.

Recent hi-fi history is littered with DACs and CD players from the likes of Wadia and dCS (amongst many others) that claim to be able to drive power amps directly -- and to significant sonic advantage. Yet, in my experience, it's a system topology that has never actually delivered -- at least not for me. Even ignoring the well-worn maxim that "90% of the sound of any preamp is down to the volume control" the problem presented by driving a range of different cable loads and input characteristics isn't one that you can afford to skate on. Analog output quality has to be considered just as critical as digital processing, but it is perhaps defying human nature to achieve that goal in the body and brain of a single designer.

Why should the Aeris have any greater chance of slicing through this digital Gordian knot than any other DAC, especially those from the established practitioners of the digital arts? Mainly because it is the product of two distinctly different brains, each with its own specific skill set but with design agendas that significantly overlap. As already noted, Rowland have an excellent reputation for their analog engineering, their line stages in particular. But they have little or no experience when it comes to front-end digital electronics. So with that in mind, Jeff Rowland contracted Thomas Holm, digital designer for hire, a man with an excellent reputation and no small expertise when it comes to digital engineering. Holm works in what he describes as "the digital/analog crossfield," while Rowland specializes in the analog/power-supply crossfield. The common ground has revealed an almost identical design "engine," or set of concerns, which doesn't just ease communication or decision making, but extends the impact of those decisions across design-domain boundaries. It may well be just a coincidence, but it's a happy one. This division of labor, properly managed, has the potential to deliver great things. Of course, the question is, does it succeed?

Keep it simple, Stupid

One of the biggest challenges facing today's digital designers is knowing what (and what not) to include in their products. On the one hand, inline USB DACs like the Halide Design DAC HD or AudioQuest Dragonfly offer up new levels of conceptual and system simplicity. On the other, once you've built a sophisticated, high-resolution digital-

conversion engine, it's mighty tempting to hang as many inputs as possible on the front end and a whole host of spurious "tools" on the back end, in part to justify the cost. There's no doubting the sheer versatility available once a signal is in the digital domain, but it really is a classic case of "Just because you could doesn't mean you should."

The Aeris treads a resolutely middle path -- in just about every respect. It's moderately sized, moderately versatile and, for a Rowland unit, moderately priced. You get four digital inputs: two S/PDIF on BNC, one TosLink and a USB. Eyebrows might be raised at the lack of an AES/EBU option, and they'll surely steeple at the fact that the USB input runs in adaptive-synchronous mode (as opposed to asynchronous), but Thomas Holm is clear on the reasoning behind both decisions.

The problem is that accurate digital transfer depends on data rate, and the balanced configuration actually doubles the data rate required. Add to that the difficulty of getting impedance-consistent XLR connectors and its no mystery as to why the 75-ohm standard, based around the excellent BNC connector, is both far more consistent and the preferred option, at least as far as Rowland and Thomas Holm are concerned.

More controversial is the use of an adaptive USB topology. To read the vast majority of recent material written on the subject, you'd think that asynchronous USB DACs are the only sensible way to go. They certainly dominate the market, especially at lower price points. But as we should all have learnt many years ago, there are no silver-bullet solutions in audio. It's not what you do but how you do it that counts -- and Holm has a couple of serious reservations about the asynchronous approach, one practical and the other performance-orientated.

The great advantage of asynchronous connection is that, by taking samples from source in predetermined time frames you eliminate source-related jitter from the data stream, which is naturally crucial if you are talking about a computer-audio source that pays scant regard to the audiophile niceties of clock accuracy and data integrity. The fix-it-after-the-fact approach of most computer data handling might work for the majority of business files, but it is all too audible when it comes to music. So, in this context, asynchronous design offers significant benefits.

However, like everything else, it is not without its shortcomings. Holm points out that, on a practical level it requires driver software to interface with the source component, and sometimes this is free and sometimes not. More importantly, it may well require updating over time, reducing the plug-and-play convenience of such devices. But his major concern relates to the way in which an asynchronous DAC handles data. Because it defines the data stream by dictating data retrieval from the operating system, the jitter level in that stream is totally defined by the accuracy of the onboard clock -- and that can vary enormously with product and price. But even a fantastically accurate clock can't overcome the issue of data loss through the actual process of reclocking the signal where samples don't precisely coincide, especially where non-native sample rates are involved.

I'm sure that the proponents of asynchronous topology would have their own responses to these points, but it's hard to argue that, given a big enough budget, an approach that works around the original data rate and clocking might well

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offer significant advantages. That's exactly what the Aeris sets out to achieve -- and the engineering is certainly impressive. Based around the principle of eliminating incoming jitter and then preventing its reintroduction, Holm/Rowland dub the topology Iso-synchronous (Isolated-synchronous), and when you look at the circuit it is a name that certainly seems to make sense. In the Aeris, the DAC is still isolated from the source clock, but instead of simply reclocking the incoming data, it seeks to reconstruct the original clock rate and sample pattern.

The Aeris takes the incoming S/PDIF data stream and converts it to I²S before passing it to a field-programmable gate array, where it is written into a buffer synchronous to the source component. The data flow is then examined by the internal clock to establish the size and spacing of each sample, a process that establishes the correct clock rate of the data stream -- which can thus be eliminated by requeuing the samples via a PLL system. A pair of high-quality VCXOs (voltage controlled crystal oscillators) is used for this, one running at 22,5792mHz (512x44.1kHz) and the other at 24,5760mHz (512x48kHz). The master-clock frequency is in turn derived from the VCXOs, creating a system that is self-monitoring/self-correcting for any drift in both the data rate and master clock. It also eliminates any jitter artifact inherent in the digital data chain, being isolated from the source whether it is replayed from a disc or a file.

The requeued data is then fed in I²S format to the DAC chip, an Analog Devices AD1853, that upsamples the data to 352.8kHz (for 44.1kHz) or 384kHz (for 48kHz). The upsampling is constantly engaged, increasing the sample rate by two, four or eight times (up to a maximum of 192kHz/24 bits) depending on the input frequency, but always in equal-numbered multiples of the native data rate, preserving the original data bits from the lower sample rate. Interestingly, Holm favors the use of upsampling because of the benefits it delivers in the analog domain, where the smaller data steps that result help prevent the op-amps from hitting the end stops of their maximum voltage change rate. Likewise, he chooses to employ a single DAC chip because multiple arrays risk introducing time smear. Propagation delay between DAC chips can be quite large when measured against the extremely low jitter on the master clock.

The DAC's output is filtered via a tiny, low-inductance, surface-mount capacitor placed right next to its output pins, before reaching a conventional current/voltage conversion stage, constructed with its output impedance carefully matched to the individual op-amps used to drive the +ve and -ve rails that create a balanced internal signal. These are then combined into a single-ended signal. This signal feeds one output buffer for RCA analog output and another buffer for a high-quality Lundahl transformer that generates the balanced output via XLR.

Why pass the output through the single-ended stage before sending it to balanced output? To obtain maximum dynamic range (an extra 6dB) from the source component rather than leaving it to chance and relying on a potentially poorly designed differential-to-single-ended input stage in a preamp or power amp. The dual topology also allows you to connect both the single-ended and balanced outputs simultaneously, as they are gain matched and independently buffered. So, driving a biamped system or adding a separate powered subwoofer becomes simplicity itself. Additionally, either output can be driven into load-induced distortion without affecting the other.

The volume control of the Aeris is also pretty elegant. It operates in both analog and digital domains directly on the AD1853 DAC chip. The current reference for the AD1853 can be adjusted by up to 50dB without adversely degrading its analog performance. The analog current reference is made digitally controllable in precise 1dB steps for a maximum analog gain reduction of 32dB, keeping well clear of the 50dB limit. By the stage at which the output of the DAC chip reaches 32dB down, the residual noise level is dominating of the I/V converter, analog filtering and buffering. Any artifacts of numerically reducing playback level will fall well below the analog noise floor and be completely masked. This approach allows for the elimination of a dedicated volume-control chip or discrete design from the signal path, keeping it short and clean. The I/V converter is based on surface-mount thin-film resistors with extremely low voltage-dependent

noise, while all signal-path capacitors are NPO type and will only influence the signal well above and below audio frequencies.

The USB input is synchronous (obviously) and will accept data rates up to 96kHz/24 bits. It uses a TAS 1020B chipset with in-house firmware to feed an I²S output to the FPGA and thence to the rest of the Iso-synchronous DAC chain. Holm suggests that the rewritten firmware has seriously reduced inherent jitter levels in the TAS 1020B and its PLL, so that the input "circuit block" already exhibits significantly better jitter levels than a normal adaptive-mode USB.

A huge amount of effort and PCB real estate has been devoted to the power supplies that feed both the digital section and the analog rails, with separate left and right power supplies feeding dedicated regulators placed directly at the point of load, each fed from a six-square-inch PCB plane, ensuring a low-inductance feed. The PCB planes double as distributed super-high-speed decoupling capacitors -- or in other words, the PCB is treated as an active component of the design. The entire circuit is built onto a single six-layer board, using surface-mount components to ensure close tolerancing and to give greater control over the physical layout. So, for example, the programmable pin-outs on the FPGA allow Holm to ensure that no signal paths need to cross, while the master clock feed gets its own dedicated layer, devoid of any other components, allowing the PCB track to be precisely impedance-matched to the design. Separate ground planes isolate the clock layer from the power-distribution layers, digital signals and components.

All told it's an impressively elegant and beautifully engineered solution to the complex issues of handling multiple digital inputs. Encase it in Rowland's classic chassis work and you end up with a product that is both compact and physically beautiful. It also operated faultlessly throughout the review period, refreshingly devoid of the digital vapors and lost signal locks that seem so prevalent amongst so many of its peers. In fact, my only complaint relates to the implementation of the volume control. Not only will you need to read the manual (yes, I know it goes against the grain, but believe me, it really is necessary) to get the optimum performance out of the Aeris, the level indication -- shown by the balance of brightness between two front-panel LEDs -- is far less than precise. For a product which is otherwise so plug-and-play, a more intuitive solution with more obvious user feedback would be desirable, especially for anybody considering feeding power amps direct, a scenario which is, as we'll see, a genuine proposition.

Making numbers make music

Okay, let's get to the point right away: The Aeris has delivered the most musically engaging digital replay that I've had in my system since the four-box Zanden player departed. The fact that it's also significantly more affordable than the Zanden, as well as rather more versatile, comes as an added bonus.

Now, please note: I haven't said that the Rowland DAC is the most detailed or most dynamic, most accurate or most transparent, highest resolution or just plain best DAC that I've ever used at home -- although in some regards it might lay claim to at least some of those crowns. What makes the Aeris so impressive is not its individual sonic attributes but the way it manages to create a convincing musical whole, its ability to reproduce a single, coherent musical event -- an event that actually makes musical and emotional sense. In that regard, the Aeris is a true (if unlikely) descendent of the Zanden, a player that put musical communication so firmly in first place that other considerations barely registered.

I could (and to some extent I will) break down the sonic attributes of the Aeris, but the first and most important thing to appreciate about this DAC is that it's not about the parts; it's all about the whole. Where so many digital products produce ever-increasing degrees of delineation, whether in terms of dynamic definition or sheer detail, the Rowland exhibits a holistic sense of cohesion that flies totally in the face of digital fashion. The current fascination with high-

resolution files puts such an emphasis on detail and information that it's easy to forget that more sound doesn't necessarily equate to more music. It is -- and always has been -- a case of not how much detail you have but what you do with it that counts, and up to a point, the more obvious that detail, the less musically successful the results. Don't go thinking that the Aeris isn't detailed or lacks resolution. It's what it does with all that detail that makes it special. In fact, to really understand the hows and whys of this design, what sets it apart from so many in the digital crowd, it needs to be assessed not in hi-fi or sonic terms, but purely on musical grounds -- the same terms or grounds on which you might describe an orchestra or band. The keys to this particular puzzle lie in the realms of phrasing, ensemble and instrumental/musical character -- not the lexicography of audio reviews.

So let's start with a work that is joyously, almost simplistically musical in character, so much so that it brings a frown of disapproval to the brows of classical snobs the world over. Mozart's *Sinfonia Concertante* K.364 isn't exactly *Eine Kleine Nachtmusik*, but that doesn't stop "serious" listeners from discarding it as elevator music. But to do so misses the musical point: the simple and enduring elegance of the conversation between the two overlapping solo instruments. There's a symmetry and purity to the interlocking elements that provides both structure and freedom to the soloists, an opportunity if they are able to take it. Listening to the Oistrakh father and son's performance (Decca gold CD [Decca 4806263]) on the Wadia S7i, there's no mistaking the intimacy of their relationship. But as soon as you transfer to the Aeris, using the Wadia solely as a transport, the musical transformation is remarkable. The sense of tempo and pace, of unimpeded progress through the piece, the way the orchestral elements build to the opening viola phrase, the almost verbal rhythms of the exchange between the orchestra and two solo instruments, create a far more natural and communicative performance. But what makes this all the more remarkable is that these are the very attributes for which I value the Wadia when compared to other digital players. The S7i has a sense of musical momentum and purpose, a solid presence that separates it from almost all other CD players. Believe me -- it's no slouch -- yet the Aeris takes those qualities and extends them significantly.

Now let's throw the Fischer/Nikolic 2007 performance [PentaTone SACD PTC 5186 098] into the mix. The first thing that strikes you is the sheer brilliance (in the chromatic sense) of the PentaTone sound. The crisp transparency of the DSD recording is the perfect foil to the lighter, brighter orchestral colors conjured by Kreizberg's faster tempi and the more modern tuning/weighting of the Netherlands Chamber Orchestra as opposed to Kondrashin and the Moscow Philharmonic, captured in 1962. But equally obvious is the core imbalance between the quicksilver perfection of Fischer's flawless technique and the more measured fingerwork and bowing of Nikolic. Returning to the Oistrakhs' performance, that central relationship between violin and viola, the ease with which the musical conversation flows and develops and the perfect weighting of Kondrashin's orchestral support make the earlier recording more musically complete and effective. It may be slower, heavier, more stately, but it is also more grounded and emotionally secure. The PentaTone disc offers flashes of brilliance and shifts in tone, but it lacks the overall coherence of the Decca recording and performances.

Were I to dissect the sonic virtues of these two discs, there's no doubting the superior dynamic range, transparency and immediacy of the PentaTone disc, but overall it is the musical integrity of the Decca that carries the day, by a substantial margin. Yet, play them on the Wadia S7i and the musical difference is less obvious, the sonic attributes of the DSD recording carrying heavier weight. Bear in mind that both replay chains rely on the Wadia transport and that they are playing the CD layer of both discs. What the Aeris achieves is a step beyond the medium and the recording, a step closer to the musical performance itself.

In no small part, that is down to the Rowland's mastery of the key spatial and temporal domains. The Aeris consistently throws a more coherent and credible acoustic space around (appropriate) recordings. So, on the Decca disc there's a

significantly more natural perspective, a much more convincing sense of an orchestra laid out before you, coexisting with you in a single acoustic space. The correctness of the conversational exchanges, their natural rhythm and the way it accents and reinforces the musical phrasing is entirely down to timing, which in turn depends on the ability of the Aeris to reproduce the natural spacing within the orchestra, between the different instruments. So much of music is about the precise placement of notes, so much of an orchestra's quality defined by its ability to act as a single, connected whole, an extension of the conductor's direction and intent that any erosion of the spatial/temporal relationships within the recording is catastrophic to the goal of reproducing a musically convincing performance.

At the beginning of the setup seminars I gave at TAVES and RMAF last year, I proposed a simple test for system quality: Just ask yourself, I suggested, how much what you are hearing sounds like people, and whether those people are in the same space as you. The next step up from there is to ask yourself just how good a band you are listening to. The Aeris doesn't just sound like people, it sounds like great musicians having a great time, the very essence of why we listen to recorded music in the first place. Bottom line: given the choice of tickets, I'd be going to see the Oistrakhs every time. With the Aeris in my system, I get to enjoy that pleasure without leaving home.

But even I have a limit to the amount of Mozart I can consume; musically speaking, it's a pretty rich diet. How about Morphine to provide a bit of contrast? Their fabulous debut album, *Cure For Pain* [Ryko RCD10262], is all jagged-edge attitude and dark, brooding textures, the inspired use of sax in place of the more familiar guitar riffs adds a serious range of texture and a special haunting quality to the tracks. The Aeris really brings out both the essential space within the recordings, but also the character and identity of the sax. Other players I've heard can deliver more impact, but none of them match the ability of the Aeris to make sense of the starkly effective arrangements and textures captured here. Think Jan Garbarek meets early Cure and you'll be someway there. With music this angular, getting the timing and interplay between the instruments wrong quickly reduces it to noise, but via the Aeris, the results have an almost addictive fascination. The dark hues are deeply shaded, the sudden stops and hesitations shocking on first hearing.

**Think Jan Garbarek meets early Cure
and you'll be someway there.**

Complex textures are confused and flattened by many digital systems, which rob recordings of their essential inner space. Steve Dawson's solo outing, *Sweet Is The Anchor* [Undertow CD-UMC-028], is a perfect example. Just as carefully crafted and beautifully recorded as the various (and seriously underrated) Dolly Varden albums, it is if anything even more fragile. This album really reveals the almost tube-like sense of coherent space, separation and dimensionality the Aeris releases from recordings, the intricate patchwork of instrumental overdubs beautifully arranged around the central vocal. And what a vocal it is, with Dawson's plaintive lyrics clearly placed in front of the "band," the sense of body and natural diction giving them a melancholy, almost ghostly presence. After that, there's only one place to go: *Duets* [a limited release on Undertow with no catalogue number] -- the half-concert/half studio album of Dawson and wife Diane Christiansen delivering pared-down Dolly Varden tracks, the two voices and single guitar arrangements pushing the intricate vocal harmonies musically even more front and center. Live tracks like "The Thing You Love (Is Killing You)" are rendered so naturally, both in terms of the familiar voices, the sheer humanity in their interplay and the life-size images that there's a real "you are there" quality to the sound. Dawson's slightly awkward guitar work, the single instrument having to carry a load that's normally spread across a five-piece band -- and stretches even that -- just adds to the immediacy *and reality* of the experience. Audio systems don't often get this close to the real event, but the fortunate coincidence of a simple recording and a performance of manageable scale combined with voices I know so well, both speaking and singing, creates a rare opportunity that the Aeris grabs with both hands.

But even less rare (and rarefied) recordings step up a notch in terms of natural presence and communication, making it easier to concentrate on the music and forget about the system. Pop on Neil Young's *Prairie Wind* [Reprise 9362-49593-2] and that high-pitched, nasal vocal is instantly identifiable. But it goes beyond just a distinctive voice. The shape, sense and feel of the songs, the tightness and easy interaction of the band are equally unmistakable. So much of the clarity and separation that the Aeris brings to music are a function not of the etched, physical delineation of separate voices or instruments within the soundstage that typifies some versions of high-end audio, but of the DAC's ability to instill each instrument or voice with its own natural, distinctive character. The Aeris succeeds by making the source of sounds easily identifiable, thus defining their individual contribution and revealing the structure of the whole.

Time and again, shifting between the Aeris and other digital source components, it was remarkable how much additional structural clarity was present with the Rowland DAC, even though the presentation was less obviously explicit. From the descending bass lines that underpin the opening bars of the *Sinfonia Concertante*, to the deep funk groove that drives "Love Is a Blessing" (on *Sweet Is the Anchor*), the position and placement of bass notes and bars becomes a consistent, critical part of the whole, underlining the shape, feel and character of the music -- just as they should. It's a quality that helps contribute to the almost chameleon-like ability of the Aeris to allow tracks their own identity and character. The Rowland DAC really does allow musicians to sound like themselves -- a rarer accomplishment than you might think!

Big is (also) beautiful

So far, every musical example I've discussed has been at the smaller end of the scale. Indeed, the more intimate the recording the more obvious the virtues of the Aeris become, summed up by the almost spooky presence of the close harmony vocals and single guitar lineup on *Duets*. But that doesn't mean that the sense of color and musical flow that allow the Aeris to set the musical bar so high don't play on a larger stage. The Starker/Dvorak Cello Concerto [Hugo LPCD 480 613-9] is a perfect case in point, the sweeping majesty of the piece, the shape of the solo and orchestral parts, the way they fit together all the more apparent and dramatic. The sense of an orchestra as a single entity, the way in which they both support the solo part and yet have a voice of their own, the internal dynamic of the piece -- the very things that make this such a compelling performance -- are writ clearly in a way that is rare outside of vinyl replay. Which is no coincidence. It's not that the Aeris sounds like a record player, but that its sense of timing and rhythm, placement and flow are shared with the analog medium, while the linearity and stability of digital replay are still all present and correct.

This temporal sophistication is even more obvious when it comes to really complex rhythmic challenges. The third movement (Aria II) of the Stravinsky Violin Concerto is a perfect case in point. The recent Orfeo release [C 849 121 A] with Baiba Skride and the BBC National Orchestra of Wales under the baton of Thierry Fischer captures the stark contrast of the characteristic opening chord, its dissonance and subsequent descent into the smooth beauty of the almost meditative, melancholy melody, so reminiscent of Bach. The Aeris accomplishes the transition effortlessly, as naturally as the apparently alien fingering falls under the hand in practice. Likewise the sharp insertion of that repeated opening chord, the vivacious gusto with which Skride launches into the closing Capriccio. It is the quality of the recording that captures the performance, but it is the musical qualities of the Aeris that release it, allowing you to hear not just what a beautifully balanced reading this is, but the depth of the soloist's immersion in the piece, a commitment that couples to and underpins her natural *joie de vivre* and musical enthusiasm. The contrasts here are musical and tonal (as they should be) rather than sonic, the dramatic effect rising from the juxtaposition in the score rather than a shift in the tonality or presentation wrought by stress on the system.

This ability to transit through the most demanding rhythmic shifts without disturbance to the musical or acoustic fabric extends to the realm of file replay. With server-based systems stepping ever more firmly center stage (driven as much by fashion as performance, it has to be said) the performance via the USB input is an increasingly critical aspect in assessing any DAC. Playing a variety of material, both high-res download (at 96kHz) and ripped discs, all via Pure Music loaded on my MacBook, running on battery with everything else shut down, produced the best results I've yet achieved from computer-based file replay -- precisely because of that sense of rooted authority and sure-footed musical progression. The clarity that comes from a good file-based source is so often undermined by a stilted and mechanical delivery -- better sonic performance but poor musical expression -- that the easy grace with which the Aeris delivers the music comes as quite a surprise. Direct comparison of discs, replayed on either the Wadia player or the dCS Paganini system, level-matched to the .WAV files stored on the MacBook, reveals just how accomplished the Rowland's USB input really is. The optical-disc replay chains still deliver greater depth and a more substantial sense of instrumental body and presence, but the Aeris's USB input narrows the gap substantially over other options I've used.

Of course, the direct comparison of disc to .WAV file is in many respects redundant. The whole point of file-based systems is the easy availability of a massive range of material, some of it in higher-resolution formats. Back-to-back comparison does tell us how capable the USB input is, dependent of course on the setup feeding it, but the real question is whether or not it offers a viable alternative to conventional disc replay -- and to that the answer is a resounding "yes." For those interested in high-res file formats, the 96kHz limit on the Rowland's USB input might be seen as a barrier, but musically speaking you should have no concerns at all. Perhaps the most telling comment on the performance of the Aeris's USB input is that it has substantially hastened the arrival of a dedicated server-based source in my otherwise hair-shirt system. To even consider the permanent inclusion of something as low-rent and downright dirty as a computer, the musical results need to be pretty impressive. Well, for the first time they are.

Direct drive

The Rowland's other big challenge -- the one that has floored all comers to date -- is the notion that putting switching functions inside the DAC should allow you to dispense with your line stage. As I've already said, it was a claim I approached with considerable skepticism, but once again the Aeris rose to the occasion, if not exactly proving me wrong, then at least making me pause for considerable thought.

Bottom line: connecting the Aeris directly to a range of power amps delivers exceptional results, generally exceeding the grip, authority and transparency achieved with a line stage in the chain. However, there are caveats. The Rowland achieves significantly better results in balanced mode. Via the single-ended RCA outputs, the benefits were definitely diminished, perhaps explaining the one situation in which the line stage still proved supreme. The Connoisseur 4.2LE exhibited superior musical expression, control and poise when compared to the Rowland driving the power amp direct. But in every instance where I was able to make balanced connections right through the chain, the Rowland always gained a welcome and musically significant degree of immediacy and intent when I removed the line stage from the system. That's a first -- and if I was running a digital-only setup it would be significant. In my system it's slightly academic simply because I rely so heavily on record replay and the Connoisseur remains my line (and phono) stage of choice, but that's not the point. The issue revolves around what sort of listener you are. The Aeris is aimed squarely at the digitally committed, forward-looking listener, delivering a level of musical performance and operational versatility that is in, my experience, unique. The fact that it does so at such an affordable price is remarkable.

Put the Aeris into a more conventional setup, revolving around mixed analog and digital sources and it still more than holds its own. The sheer quality of its analog outputs do it no harm at all, while its sheer musical quality closes the gap

between digital and top-quality analog sources. Have I heard better digital sound than I'm achieving with the Rowland? Now there's a question. I've certainly heard more obviously detailed delivery, but where the Rowland scores is in its musical, temporal and spatial integrity. The top Spectral manages to exceed the Rowland in every regard, except perhaps sheer intimacy. Its transparency, focus, dimensionality and absolute authority over timing and placement of notes and performers are astonishing. I've not had it at home, and I've not had the two side by side, so I hesitate to ascribe a specific degree of superiority, but it certainly stands as perhaps the most musically accurate digital replay that I've heard. On the other hand, the four-box Zanden revels in the sheer spirit of the performance. Again, I've not had the Japanese player in the same system as the Rowland, but it too provides one of the memorable waypoints in my digital evolution.

The Rowland is no Spectral and it is no Zanden either. Instead it is entirely its own beast. My repeated references to its analog or tubelike qualities might suggest that it is warm and wooly, rounded and overly polite. It's none of those things. What it does is take the strengths of record and tube systems, without the aberrations or nonlinearities (however cuddly or superficially attractive), and grafts them seamlessly to the best of digital. The resulting sound is highly competent and organized, but also exceptionally natural, expressive, engaging and simply downright enjoyable. The secret of the Aeris lies in its balance of virtues and the fact that those virtues are all in balance. There are no gaping holes in its musical fabric, each demand from the performers being met with equal grace and an unforced confidence that makes for rewarding long-term listening.

I spent considerable time running the Aeris directly into a pair of Rowland's 725 monoblocks, with a range of speakers including the uber-critical KEF Blades. Throughout that time I didn't play a single record, nor did I feel the need, which is perhaps the most telling fact of all. The Aeris has that happy knack of satisfying the listener -- and in the world of hi-fi, where each new unit in your system so often seems to quickly become just a stepping stone to the next "essential" upgrade, such satisfaction is not to be underestimated. To deliver such a musically rewarding performance in such an affordable, attractive and versatile package is a remarkable achievement.

But what will stay with me long after the Aeris has gone is the way it allowed me to simply put format anxiety firmly to one side. It stopped CD from being vinyl's poor relation; it finally delivered on the promise of downloadable music; it put the performers and their performance firmly in the forefront of digital replay. In bringing its innate inner balance to the numerical juggling act of delivering digital music, it also brought balance to my system as a whole, allowing me to play more music more of the time, and perhaps that should be prized above all else. ☺

Associated Equipment

Digital: dCS Paganini three-box system, Wadia S7i CD player.

Preamplifiers: Aesthetix Janus, Connoisseur 4.2 and VTL TL-7.5 Reference Series III.

Power amps: Berning 12-watt, Jadis JA30, Jeff Rowland 725 and VTL MB-450 Mk III monoblocks; Jeff Rowland 625 stereo amp; Icon Audio Stereo 60 Signature integrated amp.

Loudspeakers: Audioplan Kantata and Kontrast V, Coincident Speaker Technology PRE, KEF Blade, Living Voice OBX-R2, Raidho C1.1.

Cables: Complete loom of Nordost Odin from AC socket to speaker terminals. Power distribution was via the QRT QB8, with a mix of Qx2 and Qx4 power purifiers and Qv2 AC harmonizers.

Supports: Racks are 26" wide Stillpoints ESS (current and original versions) and Leading Edge modular designs. These are used with equipment couplers throughout, either Stillpoints or Nordost SortKones. Cables are elevated on Ayre myrtle wood blocks.

Accessories: Essential accessories include the Feickert protractor, an Aesthetix cartridge demagnetizer, a precision spirit level and laser, a really long tape measure and plenty of masking tape. I also make extensive use of the Furutech anti-static and demagnetizing devices.

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