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Power of the Sun...

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The Zanden Audio Model 2000 Premium CD Transport and Model 5000 Mk IV Signature D/A Converter

by Roy Gregory

As often as not, the challenge confronting an audio writer (especially one faced with a group test of £200 bookshelf loudspeakers) is to make more of the same seem interesting and different. In truth, the qualitative distinctions are real enough, but the apparent physical similarities tend to undermine them in the eyes – if not the ears – of the beholder. It's a vicious circle that all too often leads to hyperbole and exaggeration as the reviewer tries to make each new piece as readable as the last. There are ways round it, like allowing reviewers much more time with products – and not reviewing also rans for the sake of it, but the basic premise still stands.

The problem is, of course, that having exhausted your supply of snappy superlatives, what do you do when faced with a product that presents a genuine challenge, a performance that stands outside of your existing experience? Not only do you have to identify the nature of its performance, but you also then have to explain it to your readers. Fortunately perhaps, such products are few and far between; more often than not it's a case of a unit that

performs way beyond its price level, although still within known bounds. But, occasionally a product arrives that does things either significantly better (or at least significantly differently) than anything else you've heard. It happened with the Nordost Valhalla cabling and it happened with the Lyra Connoisseur 4.0 line and phono-stages. And now it's happened with the Zanden Audio digital electronics – £31500 worth of four-box digital hardware which, just to make matters worse, will only play CDs.



What with the current fisticuffs between SACD and DVD-A rumbling ever onwards, not to mention the whole looming shadow of A/V and multi-channel music replay, home integration and extravagant plans for multi-media server based systems, you might well question the relevance of a CD only replay system;

especially one that consists of four separate boxes and costs more than the vast majority of people spend on an entire system. However, consider this: in a world where, for the first time, downloads are outselling CDs in the top-twenty, the long-term prognosis for new, disc-based, music carriers doesn't look good. Ten years from now it is entirely possible that optical disc production will have all but ceased, leaving the vast stock of existing CD titles as the preferred medium for high quality music reproduction (rather like the role that vinyl currently occupies, in fact).

If you want a physical collection, complete with properly printed artwork and information, there's every chance that CD is going to be the basis on which it's built. If that's the case, then what is possible from what most of us would accept is a limited medium becomes a matter of considerable moment. Which is where the Zanden comes in: I may not be able to afford it, but its astonishing performance is the source of considerable reassurance.

So, having listened to the fanfare it's time to survey the goods. Zanden Audio is unlikely to be a familiar name in British audio circles, although the company has been

► building exquisite components in Japan for a number of years under the helm of Kazutoshi Yamada, starting with valve amplification. This was followed by the DAC and finally the transport, forming the combination that is the subject of this review. Like the Lyra Connoisseur 4.0, there is an immaculate quality to the presentation, fit and surface finish of the Zanden units. This isn't the ostentatious styling and extravagant use of exotic materials that has been used to justify high prices for Western flagship products. This is about extreme care and attention to detail, the appropriate use of the best materials, assembled with a craftsmanship and reverence that grows from within, both as regards the product and the people designing and assembling it. It's a quality that is hard to appreciate without seeing and feeling these products in the flesh, one that is almost impossible to capture in a photograph. In fact, perhaps the best way to appreciate it at a distance is to realise that the shape and footprint of each unit in this four-box system is entirely different, one to another, and that even the finish and materials aren't consistent across all four elements. Yet, place them side by side or set them on a rack, and they blend perfectly. Not even a complete audio novice would mistake them for anything other than a single, coherent whole. That inner integrity transcends the obvious visual differences, a philosophical touchstone that anchors and directs the sound of the Zanden just as strongly as it dictates their physical form.

Loath as I am to separate the coherence of the whole, as regards the mundane physical details I guess I'd better start with the transport. Constructed from a four-layer sandwich of acrylic and aluminium plate, each level being of a different size and thickness, the chassis of the Model 2000P transport is at once compact and astonishingly dense.



Pick it up and you are in for a shock. This particular little ziggurat might be small and perfectly formed, but it has all the physical substance of its granite cousins. Intended to resist the influence of both internal and external mechanical vibration, it sits on four solid cylinders of polished stainless steel, each with a soft polymer disc on its undersurface. The transport mechanism itself, a modified Philips CDM12 Pro 2, is recessed into a solid, 25mm thick slab of aluminium and tucked away beneath a heavy, biscuit-barrel lid in order to shield it from airborne energy. Having taken so much care in eliminating mechanical interference it should come as no surprise that Zanden isolate all noisy, AC power in a separate off-board chassis.

The slim, steel casework contains a beautifully laid out PCB, loaded with capacitors and regulation which at first seems at odds with the hand cut paper shapes stuck to the top of all the major components. That is until you realise that the "paper" is in fact copper foil, placed to help eliminate EMF leakage. The casework is executed in superbly mirror polished and heavily ventilated stainless steel,

while two multi-pin umbilicals carry the six separate DC feeds to the transport proper. Each derived from an independent, R-core transformer, they are dedicated to the transport mechanism and its output section, the crystal generator, master clock circuit, control circuitry and the display. Basic control functions are covered by the six buttons on the front fascia, with a nicely executed, sensibly solid but still manageable remote control expanding the options. The rear face carries sockets for the DC inputs and a full suite of digital outputs including an I²S optical connection for use with the Zanden DAC. Users of other models have a choice of AES/EBU or 75 Ohm BNC connections. There's also a BNC socket for a master clock output - significant as Zanden claim that their transport uses the most accurate clock available in the field of consumer audio, reducing jitter, ►

► phase related noise artefacts and clock errors; all known sources of performance problems in digital electronics.

So, nothing terribly revolutionary then. Instead, the Model 2000P CD transport represents a systematic approach to minimising the impact of mechanical, electrical and clock-derived distortion. Attention to detail is everything in this case, rather than extravagant technology, a factor that extends to the positive feel of the player's controls and the unfussy way it responds to user input; neither so fast as to confuse or so slow as to frustrate.

Like everything else about this product, the user interface is somehow just right.

The Model 5000 MkIV Signature D/A Converter may not have the obvious visual interest of its matching transport, but it exhibits exactly the

from Standby to Operate, reverse phase and select between the I²S, AES/EBU, BNC and RCA inputs, status being indicated by a selection of discrete, colour coded LEDs. The rear panel supports the socketry for the digital connections (the I²S optical using an Ethernet type plug built into an XLR

over-sampling. Instead they employ a TDA-1541A Double Crown chipset, combined with their own proprietary analogue filter, optimised for minimum phase shift. The analogue output stage is a tube design based around a 6922 (ECC88 family) double triode. Component quality is exemplary throughout, and internal construction is as meticulous as the immaculate exterior suggests.

The specification sheet lists



sleeve) a pair of single-ended RCAs for the analogue output and the multi-pin socket

for the power supply umbilical.

Zanden have identified phase integrity within the digital domain as the

the output level as 1.0V, but as it actually sounds rather louder than my Wadia 861SE I'm confident that can't be correct. Either way, it certainly had no

problem interfacing with either the Vibe or the HP100.

The external power supply is a narrow, almost shoe-box shaped unit (well, as long as you shop at Jimmy Choo's)

whose height is explained by its use of a pair of large 6CA4 rectifier tubes to supply the digital section, along with a single 6X4 for the 6922 analogue output buffer. Beautifully constructed, it's a model of practical simplicity that feeds DC voltage to the DAC chips as well as the higher voltages demanded by the analogue output stage. The stainless steel ►



same degree of care in its design and construction. Smaller than the transport, it still weighs in at a substantial 10kg, mainly thanks to the solid, 16mm aluminium slabs that constitute the base plate, front and back panels, chosen to resist vibration. The cover is (again) mirror polished stainless steel while the front panel sports the three, beautifully tapered rotary control knobs, each with an action so smooth it's almost sensual. They allow the user to switch

biggest issue in digital sound quality. As a result they have dispensed with all brick-wall filtering, up-sampling or

The I²S Interface

by Martin Colloms

In the analogue domain sound is generally represented by magnitude, meaning the varying voltages in electrical circuits within the system, the cables linking them together. Magnitude controls the mechanisms of analogue storage media (magnetic field strength for tape, or groove modulation amplitude for vinyl disc). All these different elements need to be linear in performance, not distorting the relationship between low and high volume levels, as well as providing a sufficiently wide frequency response to cover the audible range with good accuracy. At its simplest you only need a pair of conductor wires, 'send' and ground return, to carry the analogue audio signal.

For digital audio, the analogue signal from the microphone or other source enters an ADC (analogue to digital converter) where a very fast reference clock, with an operating frequency at least double that of the highest required audio frequency, is used to time the sampling or momentary measurements of the instants of audio signal voltage on a continuous basis. These measurements must be 'clocked out' of the ADC with high precision since the resolution or dynamic range of this tricky conversion of the delicate analogue signal into pure numbers relies on the quality of measurement and the accuracy of the clock. While in theory the clock, which will be controlled by a resonating quartz crystal, should keep perfect time, in practice it will have small variations due to noise, circuit factors, power supply quality, interference and vibration. The resulting imprecision is known as

jitter and while it alone will not determine the overall sound quality of the replay in a high quality digital audio system it fundamentally determines clarity, transparency, spatial quality and subtle tone colour. In the way it affects resolution, significant jitter may also appear to affect the perception of rhythm and timing.

Assuming that those ADC measurements are precise and that we now have a set of numbers which in sequence represent the evolving continuum of the time based audio signal, it is not too hard to store them on computer based discs, drives, memory cards or even a Compact Disc, essentially an early, high density optical data drive.

As the disc spins the laser illuminated head reads a coded pattern, which on decode and error correction recovers, again to high accuracy, the numbers representing the audio signal. These are then held in a temporary, continuously recycling memory chip.

The transport element of a two-box CD replay system is generally connected to its DAC (digital to analogue converter) via a two-wire interface called SPDIF. It was devised by Sony and Philips to conveniently and economically interface digital audio equipment. With sufficient care it can be made to perform quite well, although noticeably better if a third, clock synchronisation line is added to the signal path (assuming the audio components are so equipped) in order to minimise replay jitter.

SPDIF remains significantly flawed because that two-wire or equivalent connection has to carry the numeric data for both channels, appropriately boxed up with left right channel switching codes to enable their later separation. Also mixed onto this two-wire, serial data connection is the

vital clock signal plus other data, called sub-code, which has signals for track and time information, and emphasis. This apparent jumble of information has the potential for increasing jitter, depending on the quality of the interface. The degree of loss also depends on the quality of the interface connection components, optical or digital cable ground issues and the like.

With some CD transports, particularly based on Philips technology, there is another, purer four-wire interface hidden inside. This is used for short path connection of digital audio data between chips, e.g. from the decode and recovery section to the digital filter, and from the digital filter to the DAC. This is essentially a parallel interface where the left and right channel data are alternately present on one line and the clock and channel word-select signals have separate signal paths. Sub-code and other data is not present.

Use this interface and the final DAC may benefit from jitter levels that are an order of magnitude lower than for SPDIF. This internal interface is called I²S and is that which has been chosen by those perfectionist designers at Zanden to send audio data more precisely from the transport to their separate DAC. A custom multi-wire cable is used and the possible variation resulting from other types of connection is thus also avoided. The resulting higher precision of the now decoded analogue signals should be readily evident in the quality of the reproduced sound. Unfortunately, this also means that components from other manufacturers interfacing with a Zanden transport or DAC will not be able to take advantage of the potential benefits this technology affords.

► casework is, once again beautifully finished and extensively perforated to allow proper ventilation. The main power switch is located on the rear panel.

The Zanden combination was used beside my usual Wadia 861SE and the Metronome combination reviewed elsewhere, allowing a myriad of mix and match possibilities, with effectively three transports and

three DACs available on demand. The rest of the system comprised either the Tom Evans' Vibe, Pulse and Linear A amplifiers, or Hovland's HP100 and RADIA set up, driving the Living Voice OBX-R2/Townshend Maximum or B&W 805S loudspeakers. Bass extension was delivered, on occasion, by the massive Velodyne DD18, a sophisticated sub-woofer with motional feedback and digital

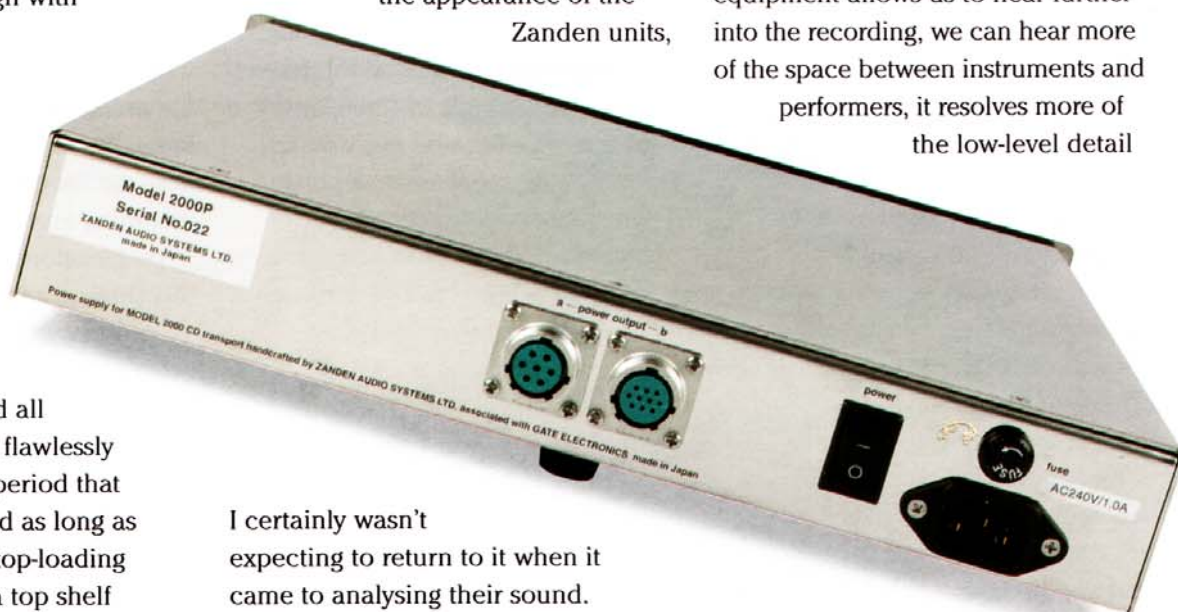
room correction capabilities. Wiring was Nordost Valhalla throughout, including mains leads and Thor distribution blocks. The only exceptions were the Zanden's dedicated I²S optical lead, and a Stereovox BNC, also employed to check cross compatibility with the other components. Where the units were mixed and matched, both BNC and AES/EBU were tried, ►

▶ but as is generally the case, it was the former that was preferred.

The Zanden was arranged on the shelves of a finite element pagode HD03MR rack, although with so many boxes to accommodate, the power supplies were forced to share a single shelf, no problem given their shape. Even so, no noise problems or other nasties reared their heads and all four boxes performed flawlessly through-out a review period that I shamelessly extended as long as I possibly could. The top-loading transport demanded a top shelf position, but again, that was no problem as with so much stellar digital hardware to deploy I'd packed away the turntables to prevent them muddying the waters. After all, I reasoned, this was

my record players – but more of that later...

When I first employed the "beauty from within" analogy to describe the appearance of the Zanden units,



I certainly wasn't expecting to return to it when it came to analysing their sound. Maybe it was a sub-conscious linkage, growing out of my initial listening, but

explain what I mean.

Often with hi-fi, especially high-end hi-fi, we approach it from the aspect of access; this piece of equipment allows us to hear further into the recording, we can hear more of the space between instruments and performers, it resolves more of the low-level detail

that brings the instruments closer to life. It's a familiar model, but it is also an external one. We are always looking in, trying to penetrate from outside and unravel what's in front of us.

It's a perspective and epistemology that is reflected in the language we've derived to describe the quality of sound:

transparency, depth, focus and resolution. What's more, in these traditional terms, the Zanden can be out-performed by the other players here.

The Metronome

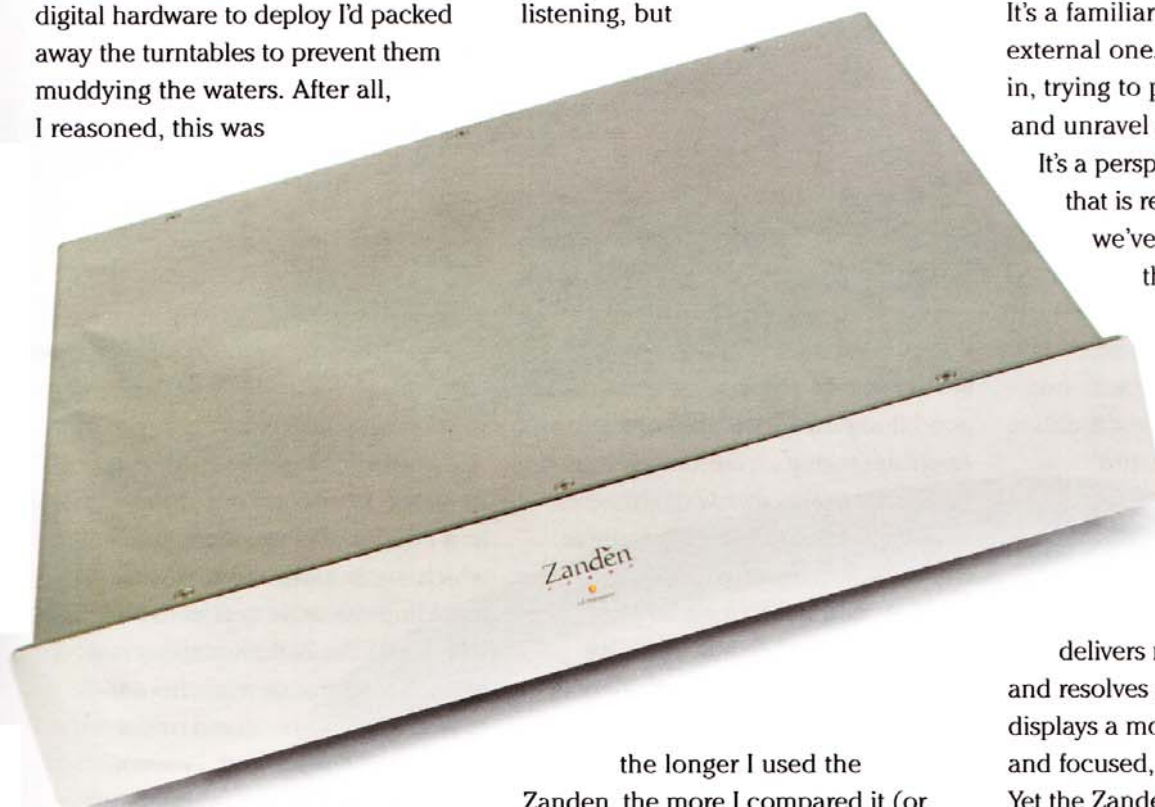
delivers more sheer information and resolves more detail, the Wadia displays a more distinctly separated and focused, even etched soundstage. Yet the Zanden is, to my ears, significantly more musical, indeed musically compelling, than either of them.

There is an internal chemistry that drives the sound of the Zanden, one that binds the musical performance together. This is the most musically coherent CD replay

supposed to

be about the absolute state of digital replay, not how it compared to vinyl. What I wasn't expecting was that, for the first time, what I was hearing would have me seriously re-examining the sound of

the longer I used the Zanden, the more I compared it (or its elements) to the other players, the more the idea took hold. Music played on the Zanden has an organic, lifelike correctness to it that seems to emanate from within the playing and the instruments themselves. It's an odd description, so let me try and



► system that I have ever used, the relationship between performers within a piece, rivalling the best I've ever experienced from any source. Yet each element is also independent, preserved as a separate and distinct entity within the whole. The ability to isolate individual instruments within the context of the whole is unrivalled, the quietest contribution surviving whole and undisturbed beside the loudest, the separate strands that are bound together to create that whole never clearer or more apparent. Yet this separation isn't dependent on spatial isolation or resolution, the kind of 3D hi-fi spectacular that pulls the music apart and rips the subtle ties that bind. Instead, the Zanden possesses an uncanny ability to preserve the quality, quantity and nature of the energy emanating from each instrument or voice. With it comes presence and correctness of tonal colour, natural dispersion and thus a natural sense of perspective, scale and dimensionality. The instruments and voices are separated because each is allowed its own, specific and unmistakable nature. That innate feel for presentation and placement extends to the temporal, with timing, the sense of ensemble, the shape of melodic strands and even (perhaps especially) the placement of individual notes, allowing the performance a vibrant, breathing, rhythmic flow – one that sounds neither fast nor slow, crisp nor relaxed; it simply sounds right, because each and every note appears exactly where and when the musician placed it. The end result is

a machine that reproduces CD with an effortless quality that conjures and encompasses the full range of musical emotions with a convincing, attractive and almost addictively lifelike quality.

That's what it does, but what does it actually mean in musical terms? Time for an example or three, or four, or more – because every search for a single disc to illustrate a point inevitably becomes a protracted ramble through the most surprising musical pastures. However, forcing myself away from the system and back to the

the instruments don't clash or compete for space. Indeed, even the smallest of well-balanced systems should sound good with this. Add to that the disdain that comes with familiarity and you might consider it an odd choice. But that's exactly the point. There's little or nothing familiar about the presentation from the Zanden. Sure it's the same recording and the same tune, but in presentational terms that's where any similarity ends.

Hearing those familiar instrumental contributions (and bearing in mind the experience of half a dozen stereo LP pressings, ranging from original through "audiophile"



keyboard (it's a good thing my iBook died and Apple are taking an inordinate time to repair it or this review might never have got written) I'll use an example with which many of you will be familiar, 'You Look Good To Me' from the Oscar Peterson Trio's *We Get Requests* (a 1964 recording from Verve, 521 442-2). Not only is this an album full of familiar standards and popular chestnuts, it's been played to death at hi-fi shows and demonstrations for years. How we all marvel as we "hear" Ray Brown putting down his bow, aren't we all impressed by the realism that a hi-fi system can bring to the smallish forces involved in a jazz trio, where

re-issues, as well as a couple of mono discs, which are actually musically the most impressive as well as the best balanced) the Zanden experience immediately stands apart from the crowd. Most of the stereo mixes are hard left and right, with Peterson's piano recessed in the middle, cast almost in a supportive role to Ray Brown's bass, quite unlike the mono discs which achieve a much better, almost piano dominant balance which leaves the listener in no doubt as to the relationship between Peterson and his rhythm section. ►

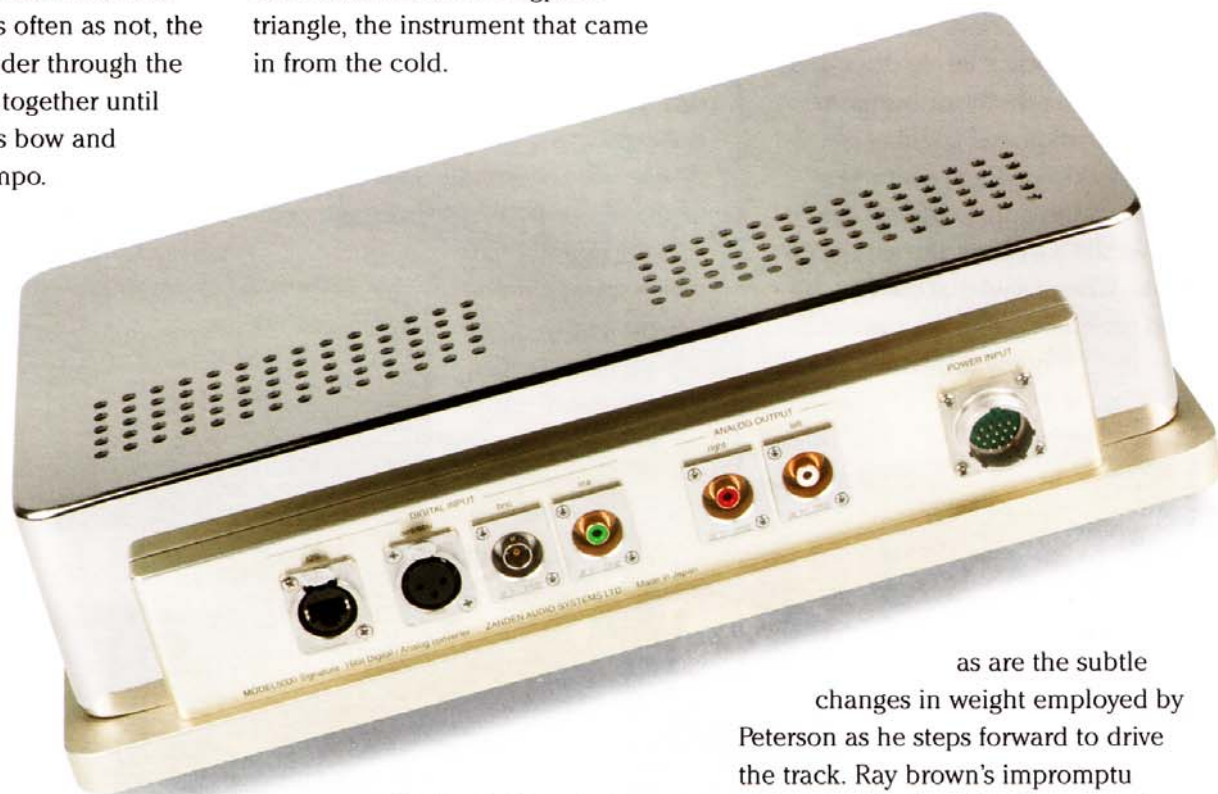
► What's more, the stereo discs tend to divorce the drums and bass, placing one in each speaker, and presenting the trio as three, distinctly separate elements with no continuity between them - an effect that extends to the musical interplay. As often as not, the piano and bass wander through the intro, never coming together until Brown puts away his bow and Peterson lifts the tempo.

Meanwhile, Thigpen's triangle is aimless and distracting, contributing nothing to the structure at all. Which is exactly how the Wadia presents things, a reasonable facsimile of the stereo records, it's focus and separation if anything exaggerating the separation between the instruments.

Playing the disc with the Zanden, that artificial sense of separation is totally dispelled. Thigpen's drums are placed slightly outside the left-hand speaker, Brown's bass behind and just inside the right-hand one. Peterson's piano is again central, but all three instruments are much larger, with greater presence, colour and body. The effect is to shorten the gaps between them, restoring the balance between piano, bass and drums while placing all three in a single, smaller but far more intimate acoustic. Now, part of that intimacy comes from the physical

proximity, but it's underpinned by a new sense of musical connection. Brown's long, bowed notes on his bass fiddle now tie to Peterson's languid yet far busier piano phrases. But the revelation is Thigpen's triangle, the instrument that came in from the cold.

astonishingly natural, as is the woody resonance of the bowed or plucked bass. The separation of brush and stick, their texture against skin or metal is perfectly realised,



Suddenly it's locked to Peterson's melodic lines, delineating their passage, binding the bars together. Finally, its presence makes sense.

The other thing you notice immediately is the sense of texture. The decay on the triangle and cymbals is

as are the subtle changes in weight employed by Peterson as he steps forward to drive the track. Ray Brown's impromptu vocal contributions finally appear in time and in tune, enhancing rather than distracting, and whilst we've known all along that it's his bow that he's putting down, there's a moment of shocking familiarity when you realise that now it really does sound exactly like a bow - a particular

sound if ever there was one. Alongside that instrumental naturalness comes the independence of character and contribution that

I mentioned earlier. Now you hear the sublime, almost telepathic understanding that exists between Brown and Thigpen, a subtlety and sophistication to their patterns that brings an effortless swing and flow to the track. And even as the piece builds it's still possible to ►



► separate and enjoy each player's individual as well as their collective contribution. The ability to define the precise nature and pattern of the notes produced by an instrument allows instant recognition of the tonal identity, texture and nature of the energy produced. At the same time that in turn dictates superb discrimination and tracking of dynamic range. Each instrument is brought, vividly to life, yet the whole still surpasses the sum of the parts. When I said that the Zanden had me questioning the capabilities of my turntables it's this

recordings. The system might no longer match the scale of the musical forces involved, but within the constraints imposed, the tonal, temporal and spatial rightness and separation is still there. The contrasting crescendos that characterise these works, full-on and ramping ever upwards for the Rachmaninoff, threatening yet abbreviated in the Sibelius, are beautifully handled, creating exactly the response intended. The Chesky disc, which has always been a murky

Stewboss, you also get to hear just what a superb drummer Jano Janosik is. His contribution to the simplicity of this song might be simplicity itself, but it's executed with an understated grace and sophistication that is a pleasure to enjoy.

Even the most intense and dynamically demanding tracks benefit from the Zanden's effortless grace and textural discrimination. Whether it's *Mari Boine Remixed* or the Boban Markovic Orkestar

(traditional Balkan brass meets drum machines, samplers and Balearic sensibilities to create a kind of "Pigbag on acid" sonic bomb-blast) the slabs and flanges that comprise the bass foundations are beautifully rendered while the fragility of vocals or slash of a trumpet phrase are positioned and preserved with precision.

How to conclude this voyage of discovery? Our musical appreciation, even more our appreciation of hi-fi, is the result of long and varied experience. We learn lessons along the way; in the case of hi-fi they can be attributed to individual components. The Lamm ML2's taught me about tonal (as opposed to spatial) separation. The Lyra Titan taught me about dynamic discrimination, the Nordost Valhalla about even energy distribution across the bandwidth and the Connoisseurs about the budgeting and distribution of that energy. Tom Evans' many products have led me along the line of phase correctness and the structural organisation that results. The Zanden doesn't so much add to this list of steppingstones, but



area to which I'm referring; the ability to keep the elements in a performance at once separate yet together, irrespective of scale, complexity or level. In this regard the Zanden is unique in my experience, yet it is also one of the key aspects that separates live from recorded sound.

Playing larger scale works like the Johanos/ Dallas Rachmaninoff *Symphonic Dances* (Analogue Productions APCD 006) or the Barbirolli Sibelius *Symphony No. 2* (Chesky CD3) demonstrates emphatically that these qualities still apply to less dramatically natural

recording, wasn't suddenly revealed in crisp, new transparency, but the instruments did blossom from within, adding character and identity to their contributions.

Less than wonderful recordings benefit too. Greg Sarfarty's over-miked vocals on 'Midnight Shift' (Stewboss *Sweet Lullabye* TDBCD064) are revealed as exactly that, the sibilance simply becoming an incidental artefact that somehow makes the vocal more real and convincing rather than distracting from it. The passage from flickering hope to melancholy is perfectly mapped, the emotional transit traversed in full. And while we're on the subject of

► draws from each and every one of them. Its astonishing musical coherence is the result of binding each and every one of these attributes, to a greater or lesser extent, into a single, meaningful whole. Only the Blue Pearl Gem turntable has previously achieved such a convincing portrayal of musical performance, and the Zanden can happily trade qualities with that.



Just like the GEM, you don't hear the Zandens working. Who would have thought that such musical results were possible from the humble CD.

What makes the Zanden transport and DAC so special is the directness of their musical communication. Their quality comes from within the music and that's what they deliver, rendering the limitations of recording and format incidental and of almost academic interest only. Used separately they are undoubtedly impressive, the DAC in particular

proving an excellent match for the Wadia transport, but there is no escaping the fact that their whole is considerably greater than the sum of their parts. Perhaps those lucky few who can seriously contemplate ownership (and if you can then you definitely should) should simply be grateful that they can at least approach the purchase in slightly more palatable chunks. Unfortunately,

I suspect that once you hear the full effect, delaying its implementation might not seem quite so attractive. For the rest of us, the relevance of the Zanden relates to the potential performance it unlocks from CD. The future's bright, it's brushed gold – along with polished stainless steel and frosted Perspex.

Previously, if someone had offered to replace my record players and record collection wholesale with CDs and a player of my choice I'd first have questioned their sanity and then I'd have shown them the door. Now, I'd have to consider that offer seriously. That's how big a step the Zanden digital electronics represent. They don't sound like any CD player I've heard before – they sound better. They don't sound like any turntable either – they're different. In many ways they've redefined my expectations of recorded music. Just when we thought that CD was dying, if not exactly dead, Zanden have brought it back to real, breathing, life – somewhere it's never been before – and that's good news for all of us.



TECHNICAL SPECIFICATIONS

2000 Premium CD transport

Type:	Two-box CD transport
Transport Mechanism:	Philips CDM12 PRO2 (modified)
Outputs:	1x I ² S 1x AES/EBU 1x BNC (SPDIF) 1x BNC (Master Clock Output)
Dimensions (WxHxD) –	
Transport:	398 x 137 x 398mm
Power Supply:	352 x 60 x 390mm
Price:	£19000

5000MkIV Signature d/a converter

Type:	Two-box digital to analogue converter with valve output stage and valve rectified power supply
Chipset:	Philips TDA-1541A (Double Crown)
Tube Complement:	1x 6922 1x 6X4 2x 6CA4
Inputs:	1x I ² S 1x AES/EBU 1x BNC (SPDIF) 1X RCA phono (SPDIF)
Outputs:	1pr RCA phonos
Output Level:	2.0V (actual)
Dimensions (WxHxD):	398 x 103 x 254mm
Price:	£12500

UK Distributor:

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