the absolute sound

MAGNUM OPUS

By Robert Harley • Photography by Ken Richardson

In September of 2016, Basis Audio founder and turntable designer extraordinaire, A.J. Conti, called to tell me, with genuine enthusiasm, about a new turntable he had just finished designing and was about to put into production. This new turntable wasn't simply a better version of the designs he'd been building for the past 30 years, but rather a *sui generis* creation that represented the culmination of his life's work.

This new turntable started life as a one-off platform for A.J.'s development work. It could accommodate up to four tonearms of any length and weight, and the major components could be easily swapped out so that each component's performance could be evaluated independently. As with other designers, A.J.'s goal had always been to reduce a turntable's distortions so that it imposed as little of itself as possible on the music. But in precisely what ways his turntables departed sonically from absolute neutrality was an unanswered question. He realized that he needed an absolute reference against which to compare the sound of his turntables and tonearms, particularly for this new design platform.

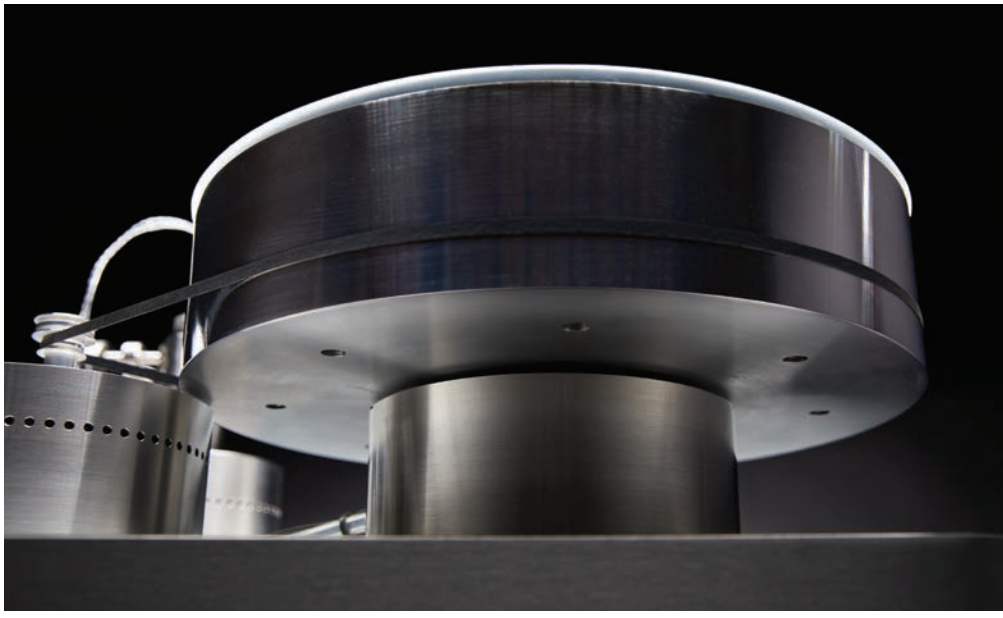
Three years before his phone call to me A.J. hit upon an idea that set him on the quest of a lifetime: to create a turntable that was so sonically transparent that it sounded virtually indistinguishable from mastertapes—a tall order, to say the least. The only way to pursue this audacious undertaking was to rethink from first principles every aspect of turntable design, and to continuously compare the sound of the turntable under development to the sound of mastertapes. Time and cost would not be limiting factors.

A.J. thus bought two top-tier open-reel tape machines (Ampex ATR-102's), and had one of them modified identically to the ATR-102 at Bernie Grundman's mastering studio. He also acquired 1:1 transfers of first-generation mastertapes from audiophile labels, along with lacquers cut from those tapes and LPs derived from those lacquers. Now fully equipped to pursue his quest of making a turntable that made LPs sound like mastertapes, he embarked on the engineering challenge. He said of this approach: "What better way to hear where you need to go, or if you achieved equivalency, than if you have the lacquer, a copy of the mastertape that cut the lacquer, and the most neutral and sonically truthful means to play those tapes, a studio mastering tape deck?"

It was after three years of this development work that he called to tell me, for the first time, about his project and the new turntable. It was rare for A.J. to phone me, even though I'd been using his superb turntables for more than a decade (a 2800 Signature and later the Inspiration). A.J. told me, with great emotion in his voice, that he came far closer to his mastertape goal than he ever thought possible.

Basis Audio A.J. Conti Transcendence Turntable

and SuperArm 12.5 Tonearm



A manufacturer proclaiming that his latest product is revolutionary is nothing new. Believe me, after 30 years of full-time audio reviewing I've heard my share of spin. Some manufacturers will say anything to get past the review gate. In fact, the hyperbole is often so over the top that it ventures into the humorous (I could tell some stories). But A.J. wasn't like other manufacturers. He was such a perfectionist engineer that marketing hype simply wasn't in his DNA. (The "white paper" that Basis published on the Transcendence wasn't written by A.J. himself.)

I can count on one hand (literally) the number of designers who are universally and unflinchingly honest about the virtues and shortcomings of a technical design—theirs and others. (During a press conference many years ago, Jim Thiel had to be gently interrupted by the company's marketing representative when he went off-script and began describing the technical limitations of his new concentric loudspeaker driver.) A.J.'s phone call wasn't a sales pitch from a manufacturer to a magazine editor, but rather the enthusiastic sharing of a landmark achievement with someone who would appreciate that achievement.

Three weeks after that phone call I received the devastating news that A.J. had died from a sudden heart attack at age 59. He had been the model of health and vitality. I was shocked and saddened—personally, for his family, and for the great loss to our industry. His contribution to high-end audio was inestimable. A.J. epitomized everything that's great about high-end audio—*serious* technical chops, a perfectionist zeal, uncompromising standards, and dissatisfaction with the status quo, all fueled by a profound love of music and an obsession with the quality of its reproduction.

A.J.'s passing left the question of what would happen to Basis Audio and this new, yet unnamed turntable. (A.J.'s working name for the turntable had been "The Truth" or "The Comparator.") A few weeks later A.J.'s widow, Jolanta, and A.J.'s brother called to tell me that Basis Audio would continue on under the technical team who had worked closely with A.J. for many years. Basis had already ordered all the parts to build the new turntable. They also told me that A.J. had expressed his plan to offer the turntable to me for review. The turntable's name was suggested by Joe Harley (no relation) of AudioQuest and co-founder of Music Matters, the company producing terrific Blue Note LP reissues. Joe was one of the first owners of the new turntable (before it had officially been launched) and proposed naming it the A.J. Conti Transcendence.

Basis Audio A.J. Conti Transcendence Turntable and SuperArm 12.5 Tonearm

Technical Description

If you're familiar with Basis turntables, the Transcendence's appearance will come as a shock. All previous Basis turntables have been made of acrylic, from the base to the platter, but the Transcendence is made of metal, specifically stainless-steel and two different alloys (one for the platter and another for the base). Despite this fundamental difference, the Transcendence's structure couldn't be anything other than a Basis. The foundational design principles and form-factor developed more than 35 years ago are on full display in this new model. The Transcendence introduces fresh ideas, materials, and execution to the same physical principles that guided the development of Basis Audio's first product, the Debut in 1984. Moreover, as with all other Basis turntables, the Transcendence is totally devoid of bling. Basis turntables are pieces of precision engineering first; any visual appeal they may have springs from the underlying quality rather than from superfluous adornment. Adding unnecessary parts to make the turntable look "impressive" was anathema to A.J. The Transcendence is pure function.

The Transcendence was designed to be a true reference with no sonic or functional limitations. Consequently, the Transcendence can accommodate up to four tonearms of any length. (My review sample was a single 'arm configuration with a Basis SuperArm 12.5.) The Transcendence was also designed to be retrofitted in the field with any future upgrades, including major components such as the platter and motor, without the need to return the 'table to Basis. Even the base can be changed in the field to a larger platform that will accommodate more tonearms. (If you think that you may add additional 'arms in the future it's best to start with the larger base.) A.J. called the Transcendence the "forever platform" because he believed that it would never become obsolete or be superseded.

The turntable is supplied with the Basis Synchro-Wave power supply and the Vacuum Hold-Down System, both of which have proven themselves over many years. The Synchro-Wave's toggle switches turn the motor on and off and select the platter's rotational speed (33 1/3 or 45rpm). The vacuum system consists of a pump that sits behind the rack, a small controller that you'll need to access when changing records, and the clamp that goes over the spindle and creates an air-tight seal for the vacuum. A pliant lip on the platter mat's outer edge forms the vacuum seal with the record. The controller has a vacuum on/off switch, a knob for adjusting the amount of vacuum, and a vacuum meter.

A metal alloy was chosen as the base material for its greater stiffness, improved damping, and ability to accommodate the heavier platter, the massive motor housing, and multiple tonearms. Indeed, the Transcendence weighs 135 pounds (not including the Synchro-Wave power supply or vacuum system). The platter, which Basis calls the Super Platter, is

Basis Audio A.J. Conti Transcendence Turntable and SuperArm 12.5 Tonearm

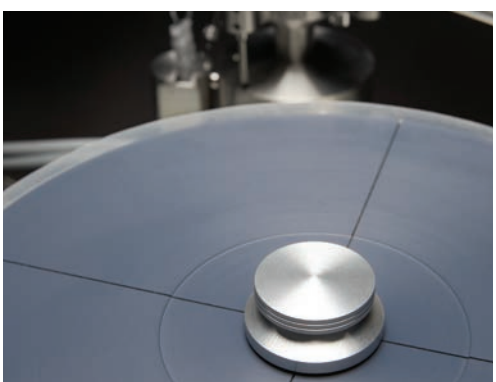
made from a different custom alloy, but both alloys come from the aerospace industry. (A.J. worked as a mechanical engineer in aerospace before founding Basis Audio in 1984.) Compared with acrylic, the alloy platter has greater mass, rigidity, and internal damping for greater speed stability and greater dissipation of record vibration. A machined polymer mat, integral to the platter, forms the interface between the LP and the platter. The mat has four spoke-like channels cut into its surface to direct the vacuum to the LP's surface.

Isolation from vibration has always been a high design priority for Basis, a goal taken to a new extreme in the Transcendence. Rather than use pliant springs in damping fluid as in previous Basis turntables, the Transcendence base is supported by four relatively stiff "suspension pods." The suspension pods are machined from solid blocks of stainless steel, with an intricate constrained-layer damping structure inside. In other Basis turntables, pressing down on the base with your finger causes the base to move and then return to its nominal position once you remove your finger. By contrast, the Transcendence suspension feels absolutely rigid. This ultra-stiff suspension provides a more stable platform for the Transcendence's much greater weight, while also incorporating new thinking in vibration isolation.

The AC-synchronous motor is modified with a custom magnet assembly for smoother operation, and then mounted behind the platter in a massive housing machined from solid stainless-steel billet. The motor housing is decoupled from the base with compliant feet. The two motor coils are driven independently by two sinewaves, 90 degrees out of phase, generated by the Syncho-Wave power supply. The two sinewaves driving the motor are independently generated and amplified rather than being created by the more common method of producing a phase-shifted replica of the single signal with a capacitor. This technique contributes to the motor's smoothness, speed stability, and lack of vibration. Indeed, one can hold the motor in hand and not be able to detect by feel if it is running or not. Basis claims that the Transcendence has lower wow and flutter than any turntable in the world—even direct-drive models—at 0.01%.

The bottom of the massive 3"-thick platter sits more than 2.5" above the base, requiring that the bearing, motor housing, and tonearm support all be of commensurate height. The ability to adjust the platter height relative to the base was a key component of making the Transcendence universally adaptable and upgradable.

Drive belts are often an afterthought to manufacturers and consumers alike. But to A.J. belts became an obsession. More than 15 years ago he discovered that very tiny thickness variations degraded the sound. The vendor who made Basis belts balked at A.J.'s insistence on tighter tolerances, so A.J. bought all the equipment needed to grind belts and starting making them himself in the Basis factory. With complete control over the process, he developed a method of making belts that are so thin they're almost translucent, as well as those of unheard-of tolerances (±0.6 micron thickness variation). For perspective, the diameter of a human hair is about 75 microns, and the track pitch of CD is 1.6 microns. I remember being floored the first time I compared the sound of a conventional belt with A.J.'s Revolution belt in the Basis 2800 turntable. Image stability was significantly better, the bass more solid, and the soundstage more precisely portrayed. How could thickness variations measured in tenths of a micron possibly affect the platter's 20 pounds of rotating mass? According to A.J., variations in belt thickness along its length modulate platter speed because the centers of the two pulleys (for the motor and platter) are in the middle of the curved belt. Belt thickness variations momentarily change the ratio of the two pulley sizes, introducing speed variations. According to Conti, we hear such speed instability not overtly as pitch fluctuation, but as a reduction in instrumental realism, a less convincing soundstage, and de-



gradation of low-level decay. (Incidentally, a company using DSP to remove speed variations printed on existing analog master-tapes, caused by mechanical imprecision in the original tape machine's capstan, has reached similar conclusions about the sonic effects of speed instability.)

Although the Transcendence can accommodate any tonearm, I suspect that most users will choose the 9" Basis SuperArm 9 or 12.5" SuperArm 12.5. (See my review of the SuperArm 9 in Issue 264.) This 'arm is spectacularly great sounding, as I discovered when I replaced the Basis Vector IV on my Basis Inspiration turntable with a SuperArm 9 a few years ago. It is an all-out execution of the ideas developed for the Vector tonearm, including the unique bearing described in the sidebar (reprinted from my SuperArm review in Issue 264). The SuperArm uses the same bearing as the Vector: A.J. once told me that he thought there was no better bearing design or execution.

The SuperArm is massive; everything about the 'arm is heavy-duty, from the armtube to the cup and pivot assembly to the headshell. In experimenting with specific modifications to a Vector tonearm, A.J. discovered sonic benefits in increasing stiffness and lowering resonances to levels below what had previously been considered acceptable. The armtube, made from a special alloy, features a "progressive damping" technique to reduce resonance.

One option is offered on the SuperArm—Basis' patented VTA Micrometer, a device mounted next to the tonearm near the bearing that allows you to precisely return the 'arm to a specific vertical tracking angle (VTA). Note that the VTA Micrometer doesn't change the VTA (you'll need to loosen a set screw and move the 'arm by hand), but rather provides a precise and repeatable way to return the 'arm to a specific VTA. It works extremely well in practice. Finally, the integral tonearm wiring assembly, from the cartridge clips to the RCA plugs, was specifically developed for the SuperArm.

As you can imagine from this description, the Transcendence is expensive: $127,000 with the SuperArm 12.5. It is priced in the rarified strata of the world's most ambitious turntables. When you look closely at the design and execution you can see where the money went. For example, machining large blocks of stainless steel with an intricate internal structure, like the suspension pods, must be very costly, as is the precision with which the parts are made. As expected from Basis Audio, the fit and finish is as good as it gets. A.J. once told me that when his metal parts were being anodized, he spent the day at the anodizing facility and stood behind the technician as the parts were removed from the chemical bath so that he could inspect them himself. Anyone who knew A.J. won't be surprised by that piece of information.

Listening

I auditioned the Transcendence with a range of top-tier cartridges including the My Sonic Lab Signature Platinum, Air Tight PC-1 Supreme, and Air Tight Opus, eventually settling on the Air Tight Opus as the best match for my system and tastes. I was also more familiar with the Air Tight cartridges. Nonetheless, the My Sonic Lab Signature Platinum had some remarkable qualities; it was extremely vivid, dynamic, and incisive, and probably more resolving overall than the Air Tight Opus. The Opus was gentler in the top end, warmer, and richer in timbre. The phonostage was my reference for the past few years, the Simaudio Moon 810LP. The Transcendence sat atop a Critical Mass Systems Olympus equipment rack, with the Basis Synchro-Wave power supply and vacuum controller on the shelf beneath the turntable. The turntable was installed and set up by Jim Fuller, who worked for Basis at the time but now operates his own system set-up business. Jim worked at Goodwin's High-End (a longtime Basis dealer) near Boston for decades, and knows turntables inside and out.

If I had to sum up the sound of the Transcendence in a single word, that word would be "solidity." Solidity of imaging, solidity of pitch and timbre, solidity of bass. Starting with imaging, the Transcendence's portrayal of instrumental images, the space in which those instruments are playing, and the relationship be-

tween the sound source and the surrounding acoustic is absolutely stunning. It's very different from any other turntable I've heard. Images have a tangibility, spatially and texturally, that is startling in its realism. Moreover, the Transcendence reveals, with exquisite precision and beauty, the sense of air around the image outlines and the way that the instrument's dynamic envelope expands into space in three dimensions, lighting up the surrounding acoustic. Amplifying this impression, the Transcendence resolves the decays of notes, along with reverberation, with tremendous precision and finely detailed texture. Cymbals, for example, seem to hang in space for a very long time, and the decays are infused with rich detail. These sonic qualities go a long way toward creating the illusion of hearing real instruments in a real space, and consequently, allowing the system to disappear.

All these virtues were evident on a wide range of LPs I've been listening to for years. One LP that I've enjoyed since I was in my early 20's, and a record that helped shift my tastes toward straight-ahead jazz at a young age, is Herbie Hancock's first outing as a leader, *Takin' Off* from 1963. Hearing this record on the Transcendence (I replaced my original Blue Note pressing with a Cisco remastering about ten years ago) highlighted just how spectacularly great the Transcendence is, not just in checking off all the audiophile criteria (which it does), but also in the way it brings music to life with a fresh vitality and verve. Even on the first few bars of piano that open the classic "Watermelon Man," the Transcendence demonstrated its remarkable ability to convey musical expression. Hancock has said that the famous piano vamp that underlies the tune was inspired by the sound of a horse-drawn watermelon wagon ambling down a bumpy cobblestone street (the six-note melody, played over the piano by the trumpet and sax, by a woman shouting from a window "Hey, wat-er-mel-on man"). The Transcendence vividly conveyed Hancock's rhythmic patterns that evoke the languid, halting gait he was trying to capture. The Transcendence's ability to precisely articulate musical rhythms, and to communicate the rhythmic interplay between musicians, was a hallmark of its performance over a wide range of LPs. On this track I also found myself appreciating anew how drummer Billy Higgins slightly odd timing played off the piano part and contributed to the unique rhythmic flow.

A polar opposite example of the Transcendence's extraordinary timing resolution is the incessant martial rhythm, driven by the snare drum, of "Mars" from *The Planets* (Mehta, LA Philharmonic, Decca). I've never heard it reproduced with such taut crispness and precision, or felt as deeply the sense of a relentless, ominous march forward.

Going back to *Takin' Off*, Freddie Hubbard's trumpet had a purity of tone that I'd never heard before, with extremely precise articulation of the starts and stops of every note. The bloom of air expanding around each attack, which Jonathan Valin calls "action," was palpable. The Transcendence revealed so much more about the sound of the instrument and Hubbard's masterful playing. The first time I heard this record on the Transcendence I was momentarily startled at Hubbard's entrance on his first solo. Although I've heard this record countless times, it sounded fresh and different when played on the Transcendence, not just sonically but musically. When you discover so much more to appreciate about a beloved album that you've been listening to for decades, you know that the component is in a class by itself.

In addition to the highly resolved expression of music's dynamics and rhythmic flow, another hallmark of the Transcendence

A Novel Bearing

The SuperArm features a novel dual-bearing introduced in the Vector tonearm. This dual-bearing solves a fundamental problem of LP playback that occurs with unipivot 'arms: dynamic azimuth error, or the tendency of the 'arm to rotate around the armtube's axis when the stylus encounters record warp. This phenomenon causes the azimuth (the perpendicularity between the stylus and record) to continuously change from the ideal 90 degrees. The solution in the Vector and SuperArm is to asymmetrically weight the tonearm (via a cutout in the counterweight) so that it "leans" onto a second "stabilizer" bearing. The main bearing is similar to a conventional unipivot, and bears virtually all the 'arm's weight. The secondary bearing simply stabilizes the 'arm to prevent it from "rolling" in response to a record warp, and also to eliminate bearing chatter. This design reportedly also reduces tracking error, a claim that I can verify; I've never heard a Vector or SuperArm mistrack. Moreover, most tonearms produce a "chattering" sound when playing as they vibrate in response to stylus movement, but the Vector and SuperArm are completely silent. Adding the stabilizer bearing sounds like a simple and obvious solution, but before the Vector no one had thought of it.

was the spectacular soundstaging. The spatial perspective wasn't just wide, deep, and transparent; it also had an almost physical tangibility conferred by the vividness of the illusion of three-dimensional objects (instruments) in three-dimensional space. Jonathan Valin once brilliantly described listening to a component (the MBL 101 X-Treme loudspeaker) as like watching a play instead of a movie. That's what listening to records played on the Transcendence was like.

I attribute this quality to three primary factors (there are probably many more secondary factors). First, the Transcendence's speed stability doesn't introduce small phase shifts that would tend to blur the sense of precision with which instruments and the space around them are portrayed. Second is the turntable's ability to extract extremely low-level information from the groove. It reaches way down to unearth the finest detail—detail that infuses instruments and the space around them with lifelike realism. Third is the turntable's extremely low noise floor, which allows the other two qualities just described to be fully realized. The vault-like si-

Specs & Pricing

Speeds: 33 and 45rpm
Tonearms: Up to four tonearms of up to 12" each
Wow and flutter: 0.01%
Speed drift: 0.012%
Rumble: –90dB (the limit of measurement equipment)
Isolation at 60Hz: 50dB
Isolation at 1kHz: 72dB
Dimensions: 18.375" x 11" x 18.375" (height is to top of tonearm)
Weight: 135 lbs. (turntable only)

Vacuum Hold-Down
Features: Vacuum adjust, meter, on/off switch
Dimensions: 6" x 3" x 8" (control unit); 8" x 5" x 8" (pump)
Weight: 6 lbs. (control unit); 15 lbs. (pump)

Synchro-Wave Power Supply
Speeds: 33 1/3 and 45rpm
Dimensions: 13" x 3" x 10.5"
Weight: 12 lbs.

SuperArm 12.5 Tonearm
Effective length: 317.57mm
Pivot to spindle distance: 304.75mm
Overhang: 12.82mm
Offset angle: 17.11 degrees
Total mass: 1220 grams
Furnished accessories: Integral 4' interconnect cable terminated in RCA or XLR connectors, engraved alignment gauge, cartridge-mounting screws, all necessary tools
Optional accessories: Mounting flange for non-Basis turntables
Warranty: 10 years parts and labor
Price: $19,500

Complete System
Weight: 166 lbs.
Warranty: 10 years parts and labor
Price: $127,000 with SuperArm 12.5

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Associated Equipment
Loudspeakers: Wilson Benesch Eminence, Wilson Audio Alexx
Digital sources: Aurender W20 server, Berkeley Audio Design Alpha DAC Reference Series 3 MQA DAC; Berkeley Alpha USB USB-to-AES/EBU converter; Audience Au24 USB cable; AudioQuest Wild Digital AES/EBU cable
Amplification: Constellation Altair 2 preamplifier; Constellation Hercules 2 monoblock power amplifiers
AC Power: Shunyata Research Triton V3, Typhon QR, Sigma power cords; Shunyata AC outlets, five dedicated 20A lines
Support: Critical Mass Systems Olympus equipment racks and Olympus amplifier stands; CenterStage2 isolation
Cables: Shunyata Research Sigma interconnects and loudspeaker cables; AudioQuest WEL Signature interconnects
Acoustics: Acoustic Geometry Pro Room Pack 12, Acoustical Surfaces Studio 3D isolation door
Room: Acoustic Sciences Corporation Iso-Wall System
LP cleaning: Klaudio KD-CLN-LP200, Levin Design record brush

lence works synergistically with the Transcendence's stunning resolution to foster the impression of simply hearing a more lifelike and realistic rendering of the original musical event.

The solidity of pitch and timbre was expressed as a vividness of instrumental textures and a distinct sense that something had been removed between me and the music. Timbres were richly rendered with a density of color, liquidity, and freedom from any sense of artificiality.

The stated goal for the Transcendence was to reduce the turntable's sonic signature to such low levels that LPs were indistinguishable from mastertapes. I don't currently have mastertapes and LP's cut from them on hand to make that direct comparison, but can comment based on my previous experience comparing LPs to the analog masters.

One of the defining deficiencies of LP playback compared with tape is the LP's reduction in power and solidity in the bass and power range. Tape just sounds more forceful in dynamics, weight, and textural density, making LPs by contrast sound a little anemic and threadbare. This statement may sound odd—we've all heard LPs with tremendous bass weight and power. But it's fundamentally different from the way tape conveys a physical power and forcefulness to the music, particularly in the power range, that seems to bypass the higher thought processes and aims squarely at the visceral whole-body experience. The Transcendence has this tape-like weight, body, impact, solidity, and textural density that is thrilling on a primal level.

I'll share with you a little anecdote that is congruent with this observation. At the Newport show several years ago, a reserved German speaker designer, who holds a doctorate in physics, was in his exhibit room that he shared with, among others, United Home Audio, a company that modifies open-reel tape machines. United Home Audio's Greg Beron put on a tape of The Doors' *L.A. Woman* and this staid engineer instantly became like an animal unleashed. His spontaneous physical reaction to hearing this familiar album on tape, without the limitations of the LP format, was priceless. He was dancing and air-drumming at the back of the room. I've never seen such uninhibited and unabashed exaltation from anyone at a hi-fi show.

This is the quality I'm describing that the Transcendence delivers, uniquely among turntables in my experience. Yes, the Transcendence satisfies on an intellectual level, but its ability to grab you by the gut and make you feel the music is nothing short of thrilling. I heard this in a wide range of music—the powerful brass section from the previously mentioned *The Planets* (particularly the tenor tuba in "Mars" that has such a prominent part); Ray Brown's swinging acoustic bass on the Bill Evans' LP *Quintessence*; the kick drum and bass guitar foundation that underlie Stevie Ray Vaughan's stunning guitar virtuosity on "Voodoo Chile" from *Couldn't Stand the Weather*; the depth and impact of the low-tuned toms in Steve Gadd's kit (and his amazing playing) on Chick Corea's acoustic quartet album *Friends*. The list could go on and on.

I was careful to use familiar LPs that I'd been listening to a long time to evaluate the Transcendence's performance, but I also acquired some new and newly reissued discs that push the envelope in LP playback. Deutsche Grammophon recently released a double LP of Hilary Hahn, one disc of which is violin and piano recorded direct-to-disc. The second disc is Hahn with various orchestras recorded at various times over many years, with the performances chosen by Hahn. The repertoire ranges from Mozart to the contemporary composer Lera Auerbach. Another fabulous-sounding record is *Vivaldi in Venice*, a new dual-disc, 45rpm issue of a recent live recording of the Interpreti Veneziani performing in their home venue, the San Vidal Church in Venice with its beautiful acoustics. Recorded by Mike Valentine on the Chasing The Dragon label, *Vivaldi in Venice* has gorgeously beautiful timbre and an absolutely stunning sense of tangible instruments in a surrounding acoustic (see Wayne Garcia's review in Issue 290). The Hilary Hahn direct-to-disc is similarly enchanting, the piano beautifully rendered behind Hahn's ravishing violin. Played on the Transcendence, these records revealed the full glory of what's possible from the LP.

Conclusion

The Transcendence doesn't sound like any other turntable I've experienced. In fact, it doesn't seem to "sound" at all, but rather disappears from the playback chain—providing a transparent window on the mastertape that created the LP. Through this disappearing act, the Transcendence more fully reveals the beauty and musical expression encoded in our LPs. Although you can listen to the Transcendence and identify a list of sonic attributes, what really distinguishes this turntable is the way that it conveys more music, more expression, more beauty, more musical intent. Discovering rich new meaning in well-worn LPs is perhaps the most profound testament to the Transcendence's preeminence. I consider the Transcendence one of the greatest achievements of high-end audio, not just in turntables and tonearms, but across all product categories.

It's impossible to consider the Transcendence without thinking about its creator, A.J. Conti. The turntable is an embodiment of the ethos he brought to his work. I'm glad that Basis named it after A.J. and chose the name "Transcendence." It's a fitting moniker on many levels. The turntable, and the pleasure it will bring music lovers, transcends A.J.'s time on this earth, and its sonic performance transcends not just that of other turntables, but also what we had assumed were the limitations of the LP format.

Basis Audio A.J. Conti Transcendence Turntable and SuperArm 12.5 Tonearm

PURSUING PERFECTION

BASIS AUDIO FOUNDER A.J. CONTI TALKS WITH ROBERT HARLEY

Editor's Note: This interview was first published in Issue 172 (June/July, 2007). It seems fitting to revisit it here.

Robert Harley: Let's start with a little bit of history about how you began making turntables.

A.J. Conti: The audio bug bit me when I was about ten years old, and by my early 20s I had a nice system with Snell Type A speakers and a Linn turntable. I didn't know that there was a high-end industry and didn't read *The Absolute Sound*, but I lucked out to get such good equipment.

I was playing music at a family get-together when someone walked across the room and the footfalls were picked up by the turntable and blew the woofer in my Snell speaker. I thought back to my first year in engineering school *[Conti has a B.S. in Mechanical Engineering—RH]* where I learned about mass-spring-damper systems and thought that with the proper critical damping and isolation *[of the 'table]*, that woofer wouldn't have blown.

I decided to make a suspension system for my Linn, then a platter, and suddenly realized I should design an entire turntable from scratch. This was 1984. I had just started a small retail audio business out of my house. I had a great job with Teledyne Corporation and had my eye on the presidency of my division. I wasn't looking to get into the business of making turntables for a living—I thought perhaps three or four people would want to buy my product. I made the prototype and was only expecting that it would never skip from someone walking in the room, and perhaps that I'd maybe hear a small difference in the bottom end. That was all I was expecting. When I cued the first record—Thelma Houston's *I've Got the Music in Me*—I was absolutely shocked. Her voice was so effortless and out of the speakers. I started demo'ing the table in my small retail dealership, and everyone who heard it wanted one. Word got around, and [Krell founder] Dan D'Agostino talked me into exhibiting it at CES with him. I showed the prototype and walked away with 50 orders. It was crazy.

This was the Debut.

Yes, the Debut. I went from knowing nothing about the high-end industry to becoming an obsessive-compulsive perfectionist. A year after I started shipping the Debut I quit my job and devoted myself full-time to building turntables.

You've said that turntable design is more science and less art than, say, loudspeaker design.

I probably oversimplified a bit because I do think there's a lot of science in speaker design, but with a transducer a lot of what happens is difficult to measure. The ideal speaker designer would be willing to make small changes to voice the speaker, even if those voicing changes are difficult to measure or if they contradict a purely technical approach.

Listening is an important part of turntable design, but I've never had the experience of making a change based on listening and then saying: "Science wouldn't lead me in that direction."

So there's a direct correlation between what you can measure and sonic performance?

Exactly. The correlation seems so uncannily repeatable, which isn't the case with loudspeaker performance. The science points us in a very logical direction. Listening is important, but we corroborate that listening with measured performance or seat-of-the-pants tests we've developed, like cuing a stylus down on a platter and putting ringing tuning forks of different frequencies on the platter to excite the platter in different ways and listening to the cartridge output. When we make a platter that's less ringy and more linear across a wide frequency range, the sound is more neutral. When we achieve better speed-stability numbers, it translates to better sound. We make a belt that is ten times more precise in terms of thickness variation, and it sounds better than a conventional belt. It's a no-brainer. Theory seems to always coincide with what you hear.

Turntable design looks complex because there are so many subsystems, but each subsystem can be optimized totally independently. Look what I did with belts. I consider the belt a subsystem of the drive assembly, which is the motor, pulley, platter, and belt. But I broke that subsystem down even further to the simple question of perfecting the belt.

How do minute variations in belt thickness affect the speed stability of 20 pounds of rotating mass? *[The reference to 20 pounds is the weight of the Basis 2800 platter, the turntable I was reviewing in conjunction with this interview.—RH]*

The speed of a driven pulley—in this case, the platter—is determined by the ratio of the diameters of the two pulleys. With a flexible belt going around the pulleys (the drive motor and platter), the effective radius is the distance from the pulley center to the neutral axis of the belt. By this I mean the point within the bent belt where the fibers are in neither compression (as in the inner part of the bent belt) nor extension (as in the outer part of the belt). When the thick part of the belt hits the pulley, the pulley's effective radius increases and it speeds up the platter. When the thin portion of the belt hits the pulley, the effective radius decreases and the platter slows down. Immense fluctuations in platter speed can be caused by variations in belt thickness along its length. We can easily measure it; if you have a belt with three bumps you will see—even with a 20-pound platter—three different speed-ups and slow-downs per revolution.

"I went from knowing nothing about the high-end industry to becoming an obsessive-compulsive perfectionist."

Do we have the hearing acuity to recognize those speed variations?

Boy, do we! Most people, including me, twenty years ago thought: "If I don't hear speed instability of a turntable, then it's below threshold—so who cares?" But long below the point where someone might recognize fluctuation of the actual tone, the phase is changing, because that tone is slightly changing frequency. It affects the decay of instruments and is quite easily audible. The music sounds clearer without speed fluctuations.

When you measure something for 20 years and keep improving it, a thousandth of an inch starts to look like a mile. Sometimes we laugh because a belt that varies in thickness by one thousandth of an inch is completely unacceptable to us now, yet that variance is one-quarter the thickness of a sheet of notebook paper.

I talked to all kinds of manufacturers of belts, and no one wanted to even attempt doing tighter tolerance than we were getting with our existing belt manufacturer. So I brought belt-making in-house and designed a specialized machine to grind belts to precise tolerances. We achieve thickness uniformity—on a production basis every day—of ±0.6 microns.

What led you to develop the Vector tonearm? ***[This interview was conducted before the SuperArm was created, but the SuperArm uses the identical tonearm bearing as the Vector. —RH]***

I wanted a pivoted tonearm that everyone could play and that would approach or equal the non-resonant sound of a great air-bearing tonearm.

In tonearms that use gimbal bearings I could hear bearing resonance unless the bearings were tightened so much that there would be very high friction. Unipivot tonearms had certain tradeoffs in terms of azimuth, float, and lack of impact, because there is an azimuth reaction to a balanced tonearm. Pull on the stylus, and that arm's going to rock.

I was working on a gimbal-bearing design and had the idea to side-load the arm—put more weight on one side—so it leans to one side and takes up any bearing slop. Then it struck me that I could do the same thing with a unipivot—make it lean in one direction, let it fall over, and give it something to fall over on: a lower bearing.

There's no way that any stylus could possibly pull the side-weighted tonearm up off the lower bearing. It's absolutely dead perfect in azimuth, and stays that way during the entire play of the record.

The design is certainly not a unipivot, but it's not a gimbal-bearing design, either. Engineers are taught that you make tradeoffs—an improvement in one area of performance has a price in another area. With the Vector, there are no tradeoffs—it has the azimuth precision of a gimbal-bearing arm without the problems introduced by ball bearings.

The Vector is the most important product we make in terms of musical satisfaction and preservation of records, which I think is not talked about enough in this industry. The most precious things aren't anything I make; they're the records. With any decent cartridge the Vector totally eliminates mistracking, which I think is an incredible thing. For me, it solves the worst sonic problem of analog playback, which is hashy, spitty, aggressive mistracking—that high-distortion sound toward the center of the record, when the going gets tough, the volume gets loud, or the signal complex. Eliminating that, for me, makes the musical experience so much more seamless while playing a record—and it saves records.

The Vector isn't the most expensive product we make, but the payoff isn't measured in money. You end up being pretty miserable if money is how you measure your life, or success, or happiness. The real payoff is when folks are thrilled, when they just love what you do. tas