

Theo Wubbolts

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Eighteen million hits

The browser needed a bit more than half a minute to find all the hits on ‘temporal coherence’. Luckily, the first two provided directly the feature....But, being curious after the visit to the Café Engels show, which was held lately, where these curiously shaped loudspeakers were noticed very positively and the enthusiastic reactions that I heard during the X-fi show last year September made me decide to pay a visit to ‘the men’ behind this concept.

The first contact was made with Ton Nahuijsen who, by the way, promoted the demo’s during the shows. The appointment was quickly made and with only the above mentioned two oral sources and one in writing –in the shape of a brochure- I drove off to Bleiswijk, in my bag a bunch of CD’s, a notebook, a camera and a healthy dose of curiosity. Underneath the doorbell I read: Dr. Hans R.E. van Maanen, who, of course, also opened the door and inside I found Ton and the third man of the triumvirate, Ron Eijling.



The “Do you want coffee?” did not fall on deaf ears and in the meantime I did recognise Hans from ‘somewhere’. Maybe from one of the two shows, but it might also be from the CES where I attended the same meeting and where I wrote down the following in the CES report: The day was further filled in by the Hi-Res Audio Experience- a forum discussion between people from the music industry who rightly worry about losing the quality of sound reproduction, read mp-3. Unfortunately, I have to admit that I had expected more (from this discussion). It got more or less stuck at the level of outsmarting the others, whereas it is such an important item. How can we get the people away from photocopying and back to reading a real book? But HVT is about music, isn’t it? Yeah, okay, but the comparison is valid: mp-3 is a bad copy of the original hi-res piece of music.



And picking from the website www.temporalcoherence.nl from Hans' report of the visit to the CES: "Hans focused on the High-Resolution Audio discussions and the high-end audio systems, but was not able to see all on these matters, also because the show is more directed towards the trade and not pointed to the customer. As a result, the demos were rather limited. Some interesting developments can be noticed: as far as the "Hi-Res" audio is concerned, the developments are going in the right direction as more and more Hi-Res recordings become available as downloads. Moreover, these recordings can be made available in different formats, ranging from MP-3 to 192 kHz/24 bit or DSD. This makes the choice easy for the consumer and to demonstrate the differences for those who think Hi-Res is not worthwhile. Another important development is that DSD files become available as downloads and D/A converters which can handle this format become available to the consumer.

There was a panel discussion on Hi-Res and one of the panel members thought he was funny by inviting everybody for a demo at his house in Holland, not knowing there was a Dutchman in the audience. After the discussion, Hans went to him to tell that he accepted the invitation and that was quite a surprise to him. Yet they agreed to give it a follow-up.....

Chances exist, you could think, and so far also the statement seems correct that we agree too on these points.



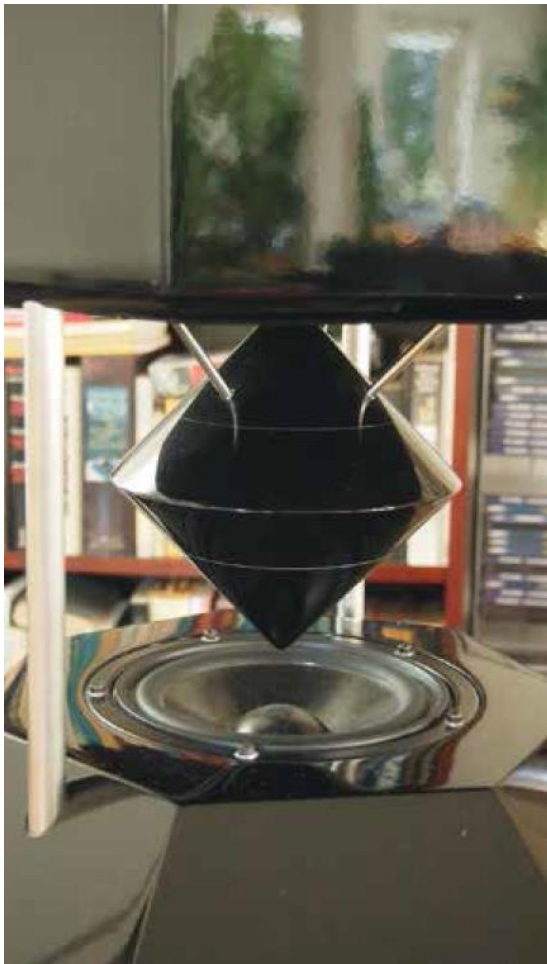
Design

No aspect is as much subject to discussion as.....design. And I don't want –for the sake of simplicity- to cut it short with the cliché 'you can't argue over taste'. I state here that we can exchange views on this, as we agree that 1 + 1 makes 2, don't we? Let me start off directly by remarking that I find the loudspeakers of Temporal Coherence remarkable to say the least. At the earlier mentioned CES, in the different hotel rooms of The Venetian or Flamingo (where the T.H.E. show is held) you find inventions which will not pass for a nomination as the Dutch Design Award or whatsoever. Some of these people I would advise to take a walk to an Italian to have something done about the design, but this is not the case with these TC's.



Admitted, this full circular radiation concept is not the only one on the market. Think of MBL, Duevel, German Physics, HiDiamond or the HK50 by Harman Kardon (1969!). At this remark, Hans immediately jumps in: “The ‘breathing sphere’ is the ideal shape for the reproduction of music”. Period. (And I seem to remember from a previous life that Quad’s Peter Walker walked around with a similar concept in his head to stick, for the time being, to his electrostatic loudspeaker).

Let me try to describe the ‘Diamant’. It is a three stage, slim appearance, more so when you realise it is an active system. The upper part accommodates the tweeter, which radiates down toward the upper half of a double cone, below which sits the squawker, who does the same in the opposite direction. In the bottom part, the woofer ‘casts an eye’ on the name-giver of this reproduction system. “Because it does not make any difference for the sound to use a different shape than a cone here. On top of that, the diamond shape is less costly to manufacture” according to Hans, to continue that the -3 dB cut off point lies at 16 Hz. Wow ☺.



Physics

Don't get me wrong, Hans does a lot of the talking in this visit report, but that leaves unscathed that both other gentlemen –they know each other from a past at the same employer, where the ‘hobby’ started during lunchtime when they discussed ‘what do you have at home’- sit by silently, because, that’s my understanding at least, he has the best qualifications to explain the physical aspects.... Dr. in physics!

“We don’t apply steep filters to obtain a correct temporal response and implement improvements, based on predictions. You cannot ignore the physics and you need to have a good understanding of ‘how it works’. For each loudspeaker unit we calculate what will go wrong in its given housing and using this, we try to make the response as wide band as possible. We also designed the power stages ourselves”, looking at Ron, who had a large share in the realisation of this all. “The woofer is controlled by a bridge configured class AB₂ power amplifier, also to keep the temperature down. On each unit ”impedance compensation” is applied as well to realize as much as possible an ideal Ohmic load for the amplifiers. These output amplifiers simply sound very good!” On the question whether feedback is being applied I get the answer: “We are not opposing it, but it is no miracle cure. We strive to tackle the root causes of distortions. By the way, things, which are not visible on the oscilloscope, are sometimes audible. But with all modesty, we do pretty well on this point too...”

Control amplifier

Ron: “In the control amplifier, the volume control is done digitally, yet the signal remains fully analogue. This completely eliminates the parasitic capacitive coupling, so there is no more cross talk between the channels. We also build a headphone amplifier. For me this really is a hobby which ran out of hand”, in which Ton supports him and states that while listening to the system you are not bugged by the ‘keyhole’-effect, pointing at the radiation pattern of ordinary cone/baffle-loudspeakers. The indirect sound has the same ‘colour’ as the direct sound.” This becomes clear during the listening session, which follows later, just as listening for a short while to the Sennheiser HD800 headphone on the own-designed headphone amplifier.



Music

Although I put a dozen CD’s in my bag, I was first to hear –rightly so- a recording of the Koninklijk Concertgebouw Orkest (RCO) of Symphony #15 of Dmitri Shostakovich. Maybe they thought I was only to bring low hanging high pressure music. But it was rapidly understood that this was not the case, because passionately was noted what I asked to put on

the turntable of the CD player. The third part of the ‘Triple Concerto’ with the Storioni Trio under Jan Willem de Vriend (Challenge Records CC72579) was welcomed with approving eyes. Also, the live-recording from the Concertgebouw with Murray Perahia in Consolation #3 of Franz Liszt enjoyed much support. The ‘Dies Irae’ from Britten’s Sinfonia da Requiem on the PentaTone label (PTC5186393) rolled realistically into the large listening room in Bleiswijk. Or join us on a trip to ‘A night in Venice’ where Oscar Peterson with his quartet got the hall at their feet with ‘Nighttime’.

Finally, it was pure enjoyment with Rian de Waal’s with Bach’s ‘Fantasie en Fuga’, BWV 542 on the Sennheiser HD800 headphones. No day without Bach, but probably also not without these Wohl Temperierte loudspeaker systems of the trio of Temporal Coherence with their set of ‘Diamanten’. The gentlemen are willing to share their designs with you and I can recommend it to you. Almost a pulsating sphere!

More information (including papers published which lay at the foundation of these systems) can be found on www.temporalcoherence.nl

CV’s of the people behind “Temporal Coherence”



Ron Eijling (1949) has roots in both analytical chemistry and electronics, especially digital electronics. Before the word “PC” had been invented he already built ‘such a thing’ (say its precursor). The advantage of such a rapid calculator was clear to him at an early stage.

His first encounter with audio was (re)building the famous ‘Hart’ amplifier in the ’60-ies. It quickly became clear to him that just a good amplifier is not the complete story. The loudspeakers were at least as important and maybe even the most important. Why does ‘live’ always sound better and can you hear from kilometres away whether it is ‘reproduced’ or ‘live’?

After meeting Hans and Ton a world opened up for him. As everything appearing in a schematic drawing has to end up on a printed circuit board, this became his responsibility. Especially ‘High End audio’ requires specific knowledge, which he has acquired. He acknowledges the importance to simulate a circuitry first (e.g. using the above mentioned PC) before soldering the first resistor and applies these techniques as a standard routine.



Ton Nahuijsen (1947) worked in chemical and technological research. Next to these research activities he has, together with Hans van Maanen, developed audio systems over some 40 years now. At a later stage, Ron Eijling came as a valuable asset to strengthen the team on his proposal.

Already since 1970 he developed with Hans audio amplifiers. New insights moved the focus of the investigations towards active loudspeaker systems and time after time it showed that a fundamental insight enabled unconventional, unique approaches. The cooperation for many years has led to a product range in which time and again has been shown that attention for the response – especially- in time domain, bears beautiful fruit. Ton has the ‘golden ears’ of the triumvirate and much listening experience. He has the opinion that for the judgment on changes in systems –next to measurements- listening is the best way to determine the ‘musicality’ of a system. Remains to be mentioned that Temporal Coherence can call on other very critical listeners with a professional background in music.



Hans van Maanen (1951) is a physicist (Amsterdam / Delft) and approaches sound reproduction in a different way than most other designers (usually with a background in electronics). Thanks to this basic knowledge he has in- and oversight of both mechanics and electronics and combines both to reach an optimum overall result. To this end, he applies innovative concepts. By curious coincidences, he is convinced now that a correct response in time domain is at least as important as a “straight” frequency response.

Next to this, he has the opinion that distortions should be judged by their effect on our hearing and not just on a figure. The design of the electronics is based on this starting point: the non-linearity is reduced in a complete different way than is common in most designs. In this way it is possible to create energy efficient systems which still sound ‘musically’. He has the opinion that by striving for an optimum of the complete system hurdles can be overcome which cannot be tackled with system, based on the traditional separation between amplifiers and loudspeakers.