

We visit Aalt-Jouk van den Hul

By Jan Didden

What do grasshoppers, 300km wiring in a Hong Kong sound studio, Antonov 225 dorsal wing reinforcements, and a Chinese satellite have in common? The answer is Aalt-Jouk van den Hul, a kind of Renaissance man and audio manufacturer.

Jan Didden (JD): Dr. van den Hul, as most readers will remember, you established your reputation in the audio world with your phono tips and cartridges. How did you get involved in that?

Dr. van den Hul (VDH): Well, my first exposure to record replay was through my father, who had an early phono player, with a “stahlnadel” [steel needle—JD], and my mother let me play records when my father was at work. This was all confiscated by occupation troops during the war, so when the war was over I decided to build my own player, which I put to-

gether from a bicycle dynamo doubling as a motor, a multiplex “turntable,” some “meccano” parts, and rubber bands. I even got it to rotate very close to 78rpm!

Later, when I was studying at Delft Technical University, I visited a company in Germany that cut and polished tips for pickup cartridges. They used the well-known “screwdriver blade” shape, which they were very proud of. Cautiously, I told their design engineer that, in my opinion, the blade shape was just cutting up the grooves at each playback. He didn’t believe me, so I set up a demo for him.

We cut a sinusoidal groove in butter from a packet, then traced that groove with a screwdriver blade. Yes, it cut the groove to pieces, so he had to admit that his shape was not very good for the record.

They asked me whether I had a better idea. Now, at that point, I needed to be very careful. If I came up with a better idea, they would claim the idea as their own. So, I developed not one, but two, solutions. I handed one solution over to them and they immediately treated it as their own!

When they had finished their first tip, they came to me in Holland and asked me to put the tip in a cartridge. This was not a simple thing, especially when you realize that this tip was the only one in existence, and if I dropped it, the chances of finding it were pretty much zero! I had to remove the existing tip from a Philips GP400 cartridge without damaging the cantilever, fill the tip hole (which was too large) with compound, then drill a hole in that compound and mount the new tip in the right position and orientation. All through a monocular microscope.

I remember we tested it on a record from Jean-Toots Tielemans, the legendary Belgian jazz musician. It sounded fantastic! And I knew it would. I can visualize various concepts in my head, particularly how geometries

affect sound reproduction, so I wasn't really surprised. The end result was that the Swiss left with that modified cartridge as well as with my record, neither of which I ever saw again!

Of course, the tip promptly became "their" tip, no longer a VDH tip! But I was so impressed with my own design and the way they manufactured it that I started to buy lots of those tips from them. That was pretty crazy because I had to pay them much, much more than the small royalty I would get from each sale! I almost went broke, but I still have those tips and I am still selling them, so it was a good investment. It also teaches you very quickly the ins and outs of doing business and how to safeguard your own interests.

JD: Did you go into technical design work when you left school?

VDH: I studied at Delft Technical University, and when I finished my studies I went into particle research at the university's particle accelerator, but at a certain point the research went into an offensive direction that I couldn't support, so I quit. After a stint in teaching, I decided to move on to the next station, and founded my own

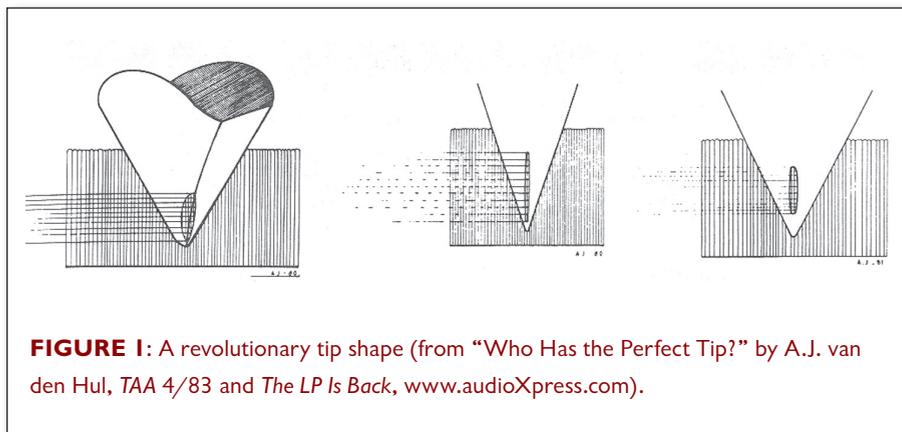


FIGURE 1: A revolutionary tip shape (from "Who Has the Perfect Tip?" by A.J. van den Hul, TAA 4/83 and *The LP Is Back*, www.audioXpress.com).

company to sell the phono stylus I had just developed. That stylus success, of course, opened up the possibility to do a lot of other things I am interested in, one of which is everything involving cabling.

After that, I never looked back and have been involved in music, in the broadest sense, ever since. Music and sound was my motivator, but I never looked at it in isolation; I always have been interested in issues surrounding audio.

JD: What was so special about that stylus tip?

VDH: It has a side rounding radius that is constant, no matter how low or

high it rides in the groove. The result is that the high-frequency tracing does not depend on amplitude, which is not the case with a lot of other tip shapes (**Fig. 1**).

Now, patenting this tip was pretty hard. I had to travel to the States several times, and made presentations of slides I made from tip pictures taken through my father's microscope. But eventually I was able to convince the patent people that my tip was new and much better, and my US patent was granted.

At that point people started to notice me because the quality improvement of that tip was so evident. At that time Philips was already working



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on the CD, so they weren't excited about the prospect of this new tip.

I got a visit from a gentleman from the famous company who invited me to company headquarters in Eindhoven. They ushered me into a fancy restaurant and proceeded to feed me lots of very good port wine. Then they offered me 25,000 Dutch guilders

for Benz in Switzerland; I designed the Goldring Elite, and maybe six others. Goldring promised me one British pound per cartridge, but when the time came to pay they said they really didn't have the money. That's when I decided to build and sell my cartridges myself, and I've sold many thousands, worldwide.

so well. I've done a lot of work on that in the Ukraine, and apparently successfully, because I am at present an honorary citizen of the capital, Kiev. So I really enjoy going off on tangents not directly related to audio, which will always remain a strong interest and hobby!

JD: That golden key on your prize shelf is the key to the city of Kiev?

VDH: Yes. There are some other interesting items (**Photo 1**). You see this "White House" baseball cap? Worn by President George W. Bush on one of his jogging runs; I managed to hold on to it during my White House visit. Another dear memorabilia, but for other reasons of course, is a pair of bricks from the Dachau Nazi concentration camp, where my father was held. I had to put a lot of effort in getting my hands on that Concorde model (**Photo 2**), but it was worth it. I think this is one of the most beautiful planes ever made. A further development of the equally beautiful British Vulcan bomber.

JD: Getting back to audio, I notice you listen to classical music while at work.

VDH: Of course, never forget to listen to the music! That's why I spend at least a week every year in Vienna. I go to the Staatsoper or to the Musikverein. Now, the Musikverein is an interesting venue that is relatively narrow and long. Yet you hear the detailed placement and sound stage of the orchestra, whatever seat you are in.

I can easily identify the Wiener Philharmonic, the Wiener Symphonic, and the Berliner Symphonic. The Amsterdam Concertgebouw Orchestra is more difficult because they often have different guest conductors who change some of the characteristic sounds. The Berliner Symphonic, for instance, has



PHOTO 1: A.J. van den Hul with memorabilia and appreciations.

(about 12,000 euro) if I would stop all my activities with these tips. I wasn't impressed by that figure and told them so, and that was the end of it.

JD: Were you also building cartridges at that time?

VDH: No, that came later. I started designing (and repairing—a great source of knowledge!) cartridges around 1987, just before the CD appeared. That was hard! Imagine winding coils with wire one-quarter the thickness of a human hair, or even less. After I taught myself to do it, I demo'd it to a group of audio journalists looking over my shoulder. Then it went fast: I started to design cartridges

JD: What's the main activity of the van den Hul Company these days?

VDH: Of course, we're still in the cartridge business. One interesting niche is providing cartridges for music companies that wish to reissue music for which they no longer have the master tapes! We then provide them with the high-quality means to regenerate the master, so to speak, from a well-preserved record.

The bulk of the company business these days is cables and cabling systems, but my own focus is still shifting. One of the things I've done recently is to develop some programs to help companies and shops that aren't doing

a very constant and stable recording technique and equipment which makes their characteristic sound easily recognizable. It's also simply miked—just two or three, with possibly a few in the back of the venue to capture the acoustics.

Good sound engineering means that the orchestra and venue are clearly recognizable in the end product. But it puts a lot of responsibility on the recording engineer. He needs to have a first-class pair of ears and needs to be able to listen “through” the performance—with the entire attendant recording stress—to know how it will sound at the end of the process. He needs to have a strong image in his brain of how he wants it to be.

That's one of the strengths Decca had: Their SXL series is very high quality and very consistent, clearly recorded with the same equipment by the same people for the whole series. I don't think it has ever again been done so well, although EMI often came close. Good sound recording is not easy and we should recognize the incredible jobs some of these people do for us.

DGG also used quite aggressive A/D converters for their first digital recordings, which I thought were not very good. There was a lot of justified criticism but also a lot of praise for that crystal-clear digital sound, which I never understood. I mean, you've got ears, don't you? You just had to listen to know it was a step backwards from good analog. But it's extremely difficult to be objective, not to be dragged along with the mainstream, and influenced by expectations, and experiences in your youth. Your taste for music, for instance, is very strongly determined by what you are exposed to when young.

In my case it was the church organ. My father was the church organist

and always played that music on the home organ. I remember that one day, early in the war, my father was playing Maarten Luther's “A strong castle is our lord” when a German military unit came to arrest him. The unit leader was also an organ player and he joined my father and they played together for a while. After they finished, the Ger-

marketing and advertising stories. My article was changed beyond recognition, and I went into the editor's office and symbolically handed in my pencil. I stopped writing for periodicals but continued to put my thoughts in writing, as witnessed by my articles on the van den Hul website (www.vandenhul.com).



PHOTO 2: A.J. proudly shows off his large scale Concorde model.

mans left, to come back two minutes later to formally arrest my father, who, of course, was no longer there. A moment of humanity in a sea of madness that was.

JD: I remember that you used to write articles for the audio press, but haven't seen any lately. Is it something you stopped doing?

VDH: I'm not a journalist by trade; I wrote a few articles at the request of some early Dutch technical periodicals. Then at a certain point I wrote an article on a comparative test of a trio of video recorder technologies Betamax, Video 2000, and VHS. Unfortunately, my conclusions didn't align with the

JD: Since you mentioned cables, can we talk a little about that? I remember when you came out with your carbon interlinks; I thought: Huh? How can that improve anything?

VDH: Ahhh! You see, when I worked with those tiny wires I started to become interested in what actually happens in a conductor and what can go wrong, so it was back to the study room again! The standard story is, of course, that electrons are responsible for transporting electrical current through a conductor, but that's only part of the story. It is accompanied by a modulated electromagnetic field. I visualize the process more in terms of electromagnetic fields than of electrons

moving around, although both views are largely equivalent. It's just that the electromagnetic field view is easier for me.

JD: The electromagnetic view led you to carbon interlinks?

VDH: It's hard to say how creativity works, but I remember wondering why everything always had to be from metal for low resistance, and the importance of low resistance. I started to think about designing a non-metallic cable and ended up with carbon. Not super-low resistance, but with a perfect lattice structure, much better than any metal cable could reach. No impurities, no structural defects.

So, don't look only at conduction. There's a well-known company here in Holland, Siltech (www.siltechcables.com), who advertised the fact that they dope their silver cables with 5% gold. On the face of it you might think it helps conduction. But a gold molecule has a much larger structure than a silver molecule. So by gold doping you introduce a lot of irregularities in that cable! Many of our cables are a combination of metal core with a carbon mantle. The carbon improves the conduction when there are small defects in the metal. It gives a better chemical protection and absorbs EMI better.

Here at our laboratories I have run a separate spur to the entry panel with our own hi-end mains cable. Now, you can say, how can it make a difference when I have 40 miles of ordinary wire ahead of it to the substation? But what that special cable does is filter out a lot of HF interference that is generated locally in our building from the myriad computers, test equipment, cell phones, and other gear. Filtering your mains signal and avoiding interference contribute to cleaner sound.

JD: You also use your own proprietary insulation on your cables.

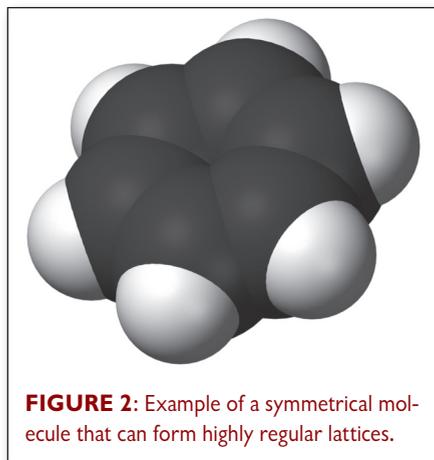
VDH: Yes, I use halogen-free material in the insulation and jackets, without softening products, which we developed ourselves. That was a decision I made in 1990, to go away from PVC and make our own materials.

JD: Does that influence the performance of the cable as a conductor of electrical signals?

VDH: Yes, it does. Chemicals are always restless, always on the move. PVC migrates all over the place and eventually damages the metal structures of the conductor. Soft-makers, which you need to keep PVC supple and soft, are quite aggressive in this respect. And over time they evaporate, making the PVC shell hard. So, when you then bend or flex the cable, something has to give and very often it internally damages the conductor. Cables are needed to transport the music, but they must do that as cleanly as possible; the emotion is in the music and not in the cable!

JD: So coming back to the carbon cable, if I would measure it, would it have a rather high resistance?

VDH: About 28Ω for a meter. But that's of no consequence for an audio interconnect. Anyway, look at that [carbon] cable as a series of circular molecules of carbon and hydrogen where you remove a hydrogen atom from one position. **Figure 2** gives an



impression of such a molecule. The position where the hydrogen atom is removed (light gray) becomes the position where the molecules latch together, and you get a perfectly regular structure. The difficulty in 1990 was how to manufacture such a cable.

JD: Is there a clear relation between cable performance and price?

VDH: Sometimes people question the pricing of our cables, but there's always a good reason something costs more than a comparable product. For example, some cable manufacturers use the equivalent of a pair of drills, at opposite ends, to twist their cables. That is the best way to ruin the cable! It may still look good, but sound-wise it will be a disaster. I consider carbon fiber the best electrical connection you can have: very reliable, not chemically active, and extremely stable both electrically and mechanically and with a perfect internal structure for signal transfer.

JD: Dr. van den Hul, what, then, are your personal interests these days?

VDH: Actually, lots of my time goes to two areas. One area is a kind of fallout of my carbon cables. I really like these fibers; some time ago I started a new company for developing all kinds of high-tech fibers. Not just carbon fibers, but also aramide-type fibers and even fibers made from basalt rock material!

[Points to a model of an Antonov 225 giant transport plane on his desk.] See that plane? Can you imagine the stress on whatever keeps those two wing halves together on top of the fuselage? When the plane taxis, and the wing tanks are full of kerosene, our carbon fibers keep them from falling off! No kidding! There's even a satellite in orbit that has a VDH carbon frame. Once people find out the advantages of that material, it really takes off. Selected HP and ASUS

laptops have our carbon shells, as do some upscale Nokia mobile phones.

My other area of interest has more to do with ourselves as living beings. One thing I discovered was that rhythms that are prevalent in classical music often correspond with the signaling rhythms internal to the body, which make various organs work together. What most people don't know is that the heart can emit up to 136 different acoustical tones, and that organs react to those tones. So when the heart doesn't function optimally, it's not just the circulation that suffers. It has other detrimental effects on the body as well. My current interest is very much on how those internal body parts work together and communicate, and how that determines "the person" we see and experience from the outside.

I recently acquired an interesting combination of hardware and software that can analyze one manifestation of this "persona" through the electrical field a person generates [points to an oversized mouse-like object connected to a laptop]: the Human Body Field (HBF). Trying to draw conclusions from the body field is an old idea; the Russians already attempted to monitor Yuri Gagarin's body state from the electrical signals it emitted, when he—as the first human ever—circled the globe in a satellite.

The people at NES (www.nutrienergetics.com) developed the concept into powerful analysis software running on this laptop. Now, NES does not diagnose or cure illnesses and it's not a validated medical system. But, that said, I've seen some remarkable changes for the good in people whose HBF was analyzed and who were recommended certain remedies. So I find it fascinating enough to spend time on it and to delve deeper into the matter.

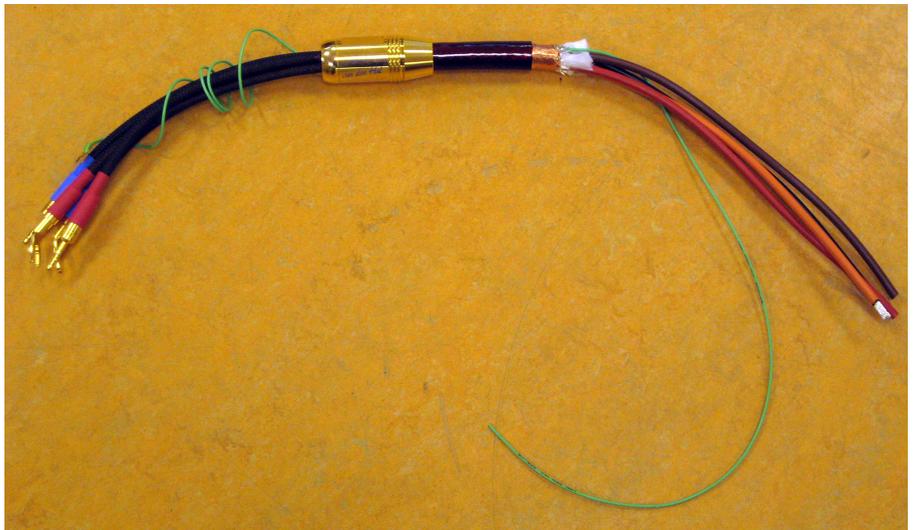


PHOTO 3: The construction of a bi-amping VDH cable.

JD: Back to audio; do you think that SACD will establish itself in time?

VDH: No, I don't think so. I think we will see the CD continue to be used for the near future and then gradually give way to downloads, either on-demand or as a purchase. Also, if the trend toward 3D video continues to grow, audio may even become just a supporting medium for video, with musical performances reproduced as a 3D holographic event supported by multichannel audio.

Interestingly, in many developing

countries (and for this purpose that includes China), we see similar developments as we saw in the western world decades ago regarding hifi and hi-end audio. If you go to hi-end shows in our part of the world, most visitors are of age, while in the developing countries they are generally quite younger. If you go to hifi shows in Vietnam or Hong Kong, you get a déjà vu from what we had 30 years ago.

JD: Dr. van den Hul, thank you very much for your time and frankness. **MP**

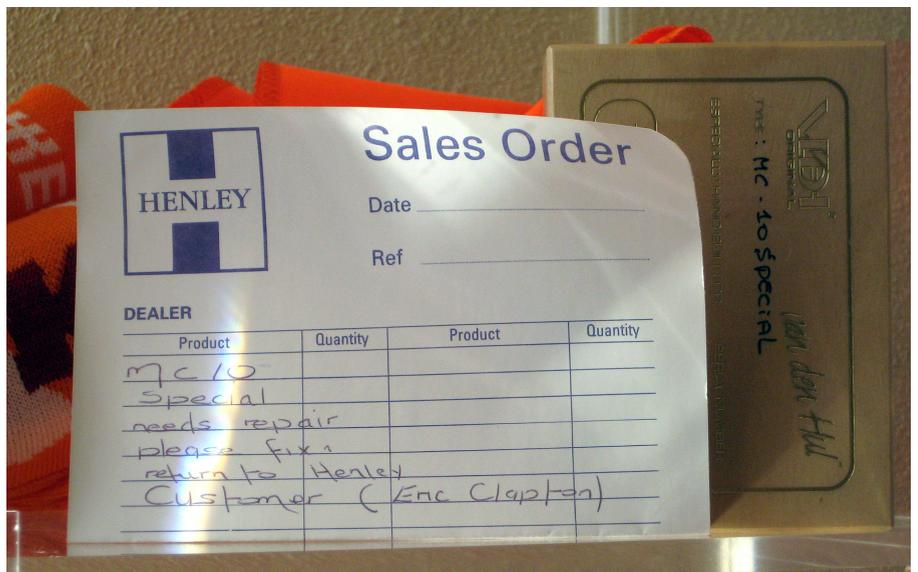


PHOTO 4: The sales order for repair of Eric Clapton's cartridge.