



DS Audio Story No.01

Why did we start developing the optical
cartridge?
Why did DS Audio begin?

What do I want to do with my life?

That day, on the turntable, a cartridge was glowing. To tell that story, I have to go back to my university years.

I was a student on the varsity baseball team, and all I did was chase a ball, every day. I had never once thought about the future. In my third year, when everyone around me began job hunting, I asked myself for the first time:

What do I actually want to do?

**I want to create products
that make people think,
when I am gone:
“I’m glad he was here.”**

That was the only answer that came. Not income, not security, not status. I would spend my time creating things that make people happy. The yardstick I set that day has been the measure of every decision I have made since.



Meeting the Toshiba optical cartridge

If I wanted to create products, I would have to start a business of my own. Then accounting, at the very least, would be a weapon. I decided: “If I don’t pass the CPA exam within one year, I give up this dream.” I was fortunate enough to pass, and on the very day I completed the two years of practical experience required at an audit firm, I handed in my resignation.

I went to Digital Stream, the company my father ran. It was a small firm quietly doing contract development in optical technology, and I was there looking for a thread that might lead to something new.

One day, Mr. Yamada, an advisor to the company, said to me:

“Why don’t you come over and listen to some vinyl?”

The forty-year-old Toshiba optical cartridge Mr. Yamada was using.



I was born in 1986. I had never listened to a record, and I did not even know the difference between MM and MC.

In Mr. Yamada's house were speakers he had built himself, and an amplifier he had built himself. "Something easier than classical would be better, wouldn't it?" he said, and put on Michael Jackson's "Thriller."

I got goosebumps. The singer rose up and was singing right in front of me. The sound caught on nothing; it simply reached out and kept going. I had listened to music on MiniDisc and iPod all my life, and believed the newest products must sound best. A black disc from decades earlier overturned that belief in a single song.

So this is what a record sounds like.

Mr. Yamada's room. From footage shot at the time.



► Footage from those days (1:20)

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Then I noticed: on the turntable, the cartridge was glowing.

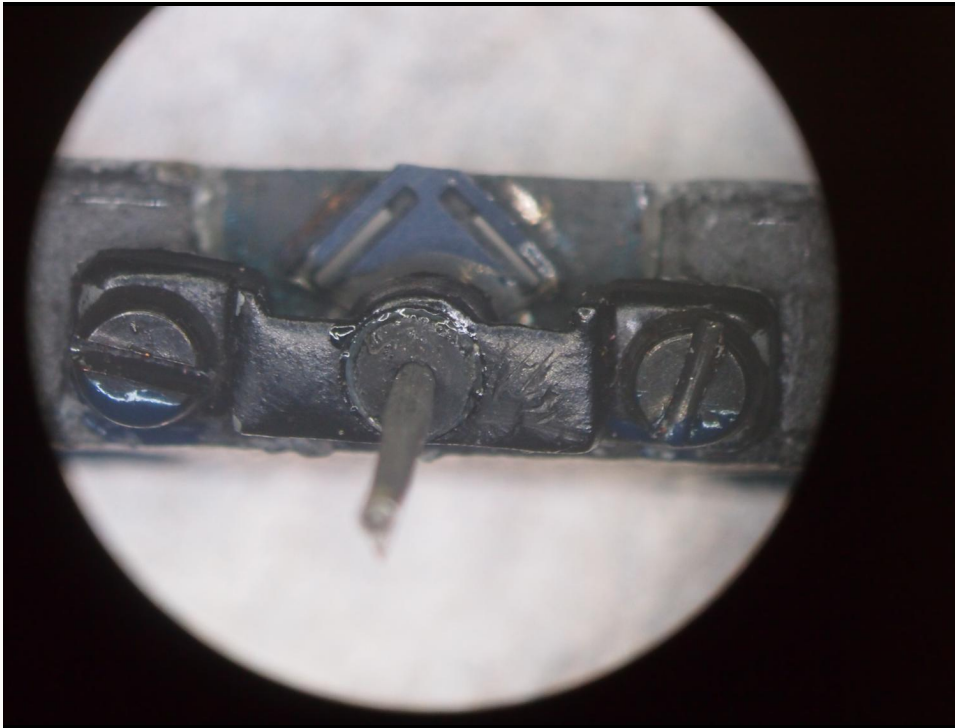
“What on earth is that?”

“An optical cartridge. Toshiba made it in 1972. Back then all they had were lamps, and the heat caused problems, so it never worked out.”

“But today there are LEDs. Your company develops optical products, doesn’t it? You have the light technology. Why not try it? You might make something even better.”

And with that, Mr. Yamada gave me the cartridge he had.

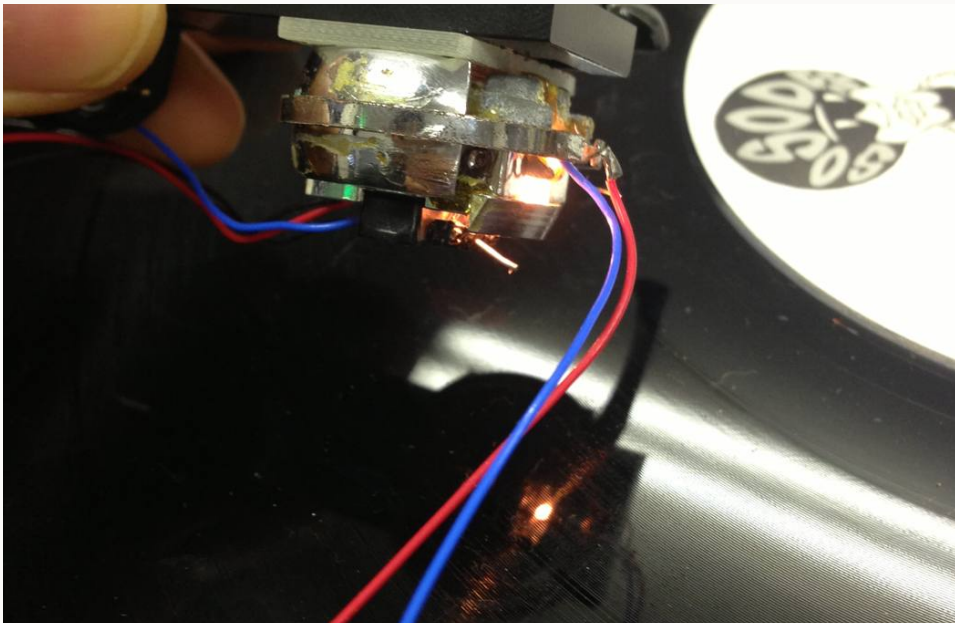
The Toshiba cartridge from Mr. Yamada, opened up. A tiny lamp reads the movement of the stylus.



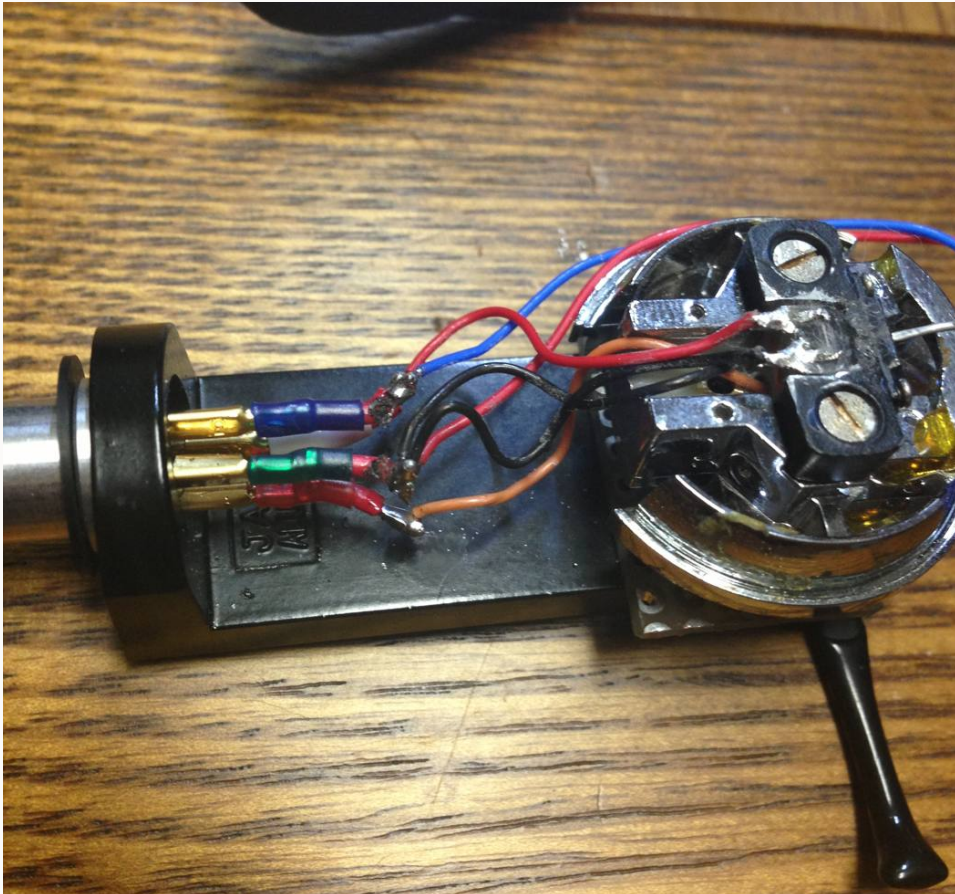
I don't know how many. Maybe ten. But for those ten, it might become a product they remember for the rest of their lives.

If a forty-year-old cartridge could sound like this, then one built with today's technology would surely astonish and delight people, just as it had astonished me. This was what I had been searching for. This was what I had to do. I knew it instantly.

The next day I opened the cartridge under a microscope. Inside were a cantilever, a shading plate, a lamp, and a photodetector. That was all. Maybe I could do this. I went to Akihabara and bought the latest LEDs and photodetectors. That is where the development of the optical cartridge began.



Top: the Toshiba cartridge under the microscope. Cantilever, shading plate, lamp, photodetector. Bottom: the first time it lit up with an LED inside.



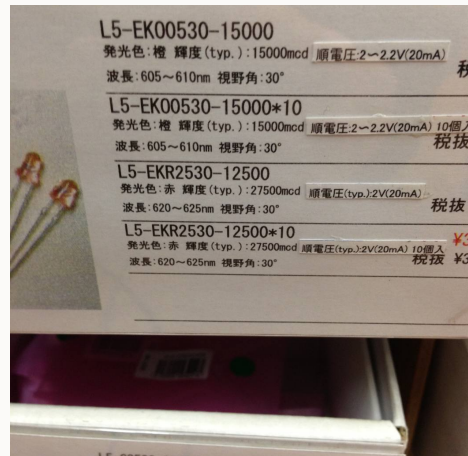
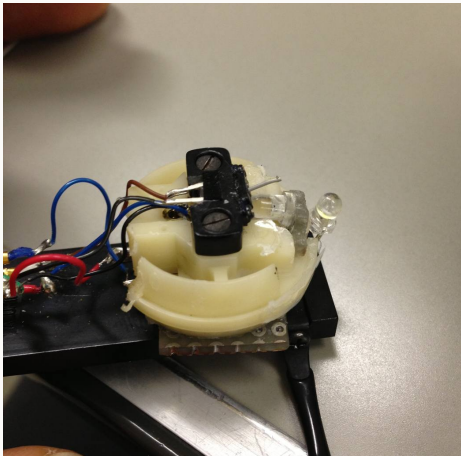
The first sound

I replaced the lamp with an LED I had bought, and soldered it in place. When I played a record, faintly, I could hear sound.

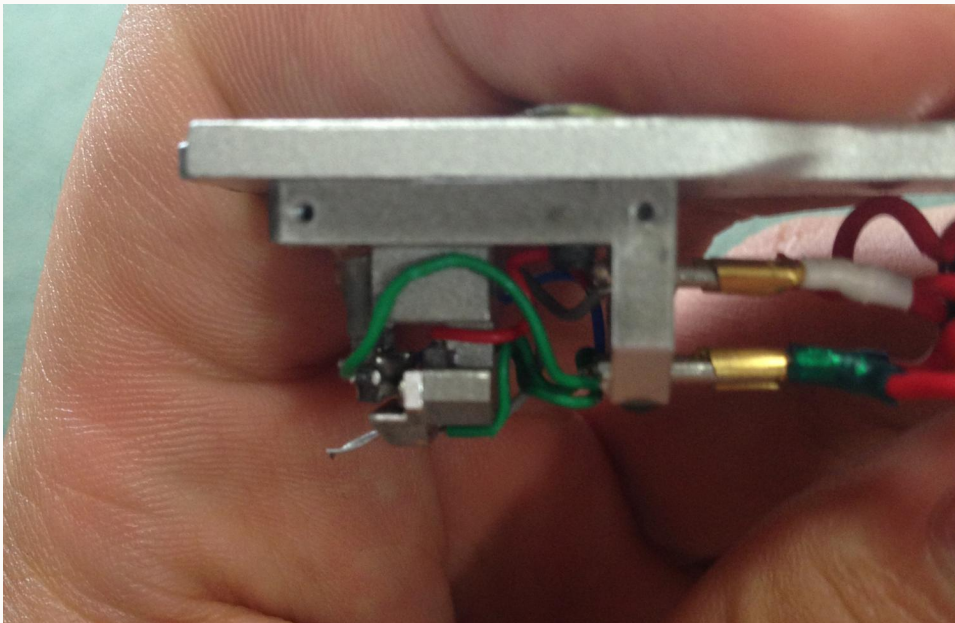
But the output was extremely low. With the amplifier turned all the way up, it was only just audible.

And yet that faint sound was astonishingly pure. If we could only raise the output, this would be a wonderful product. The conviction was born in that moment.

There was only one problem. How to get the output.



A prototype wired directly to a headshell, a prototype with an LED in a plastic housing, and LEDs from a parts shop.



The distance between LED and photodetector. How the light spread. Brightness, sensitivity, mounting position. Change one thing, listen. Change another, listen. The output rose only a little at a time.

Sourcing cantilevers and styli, making damper rubber, mounting, gluing. Everything was a first, and there was nothing to do but feel my way forward. Channel separation was the hardest of all; there were times I thought 20 dB was simply impossible.

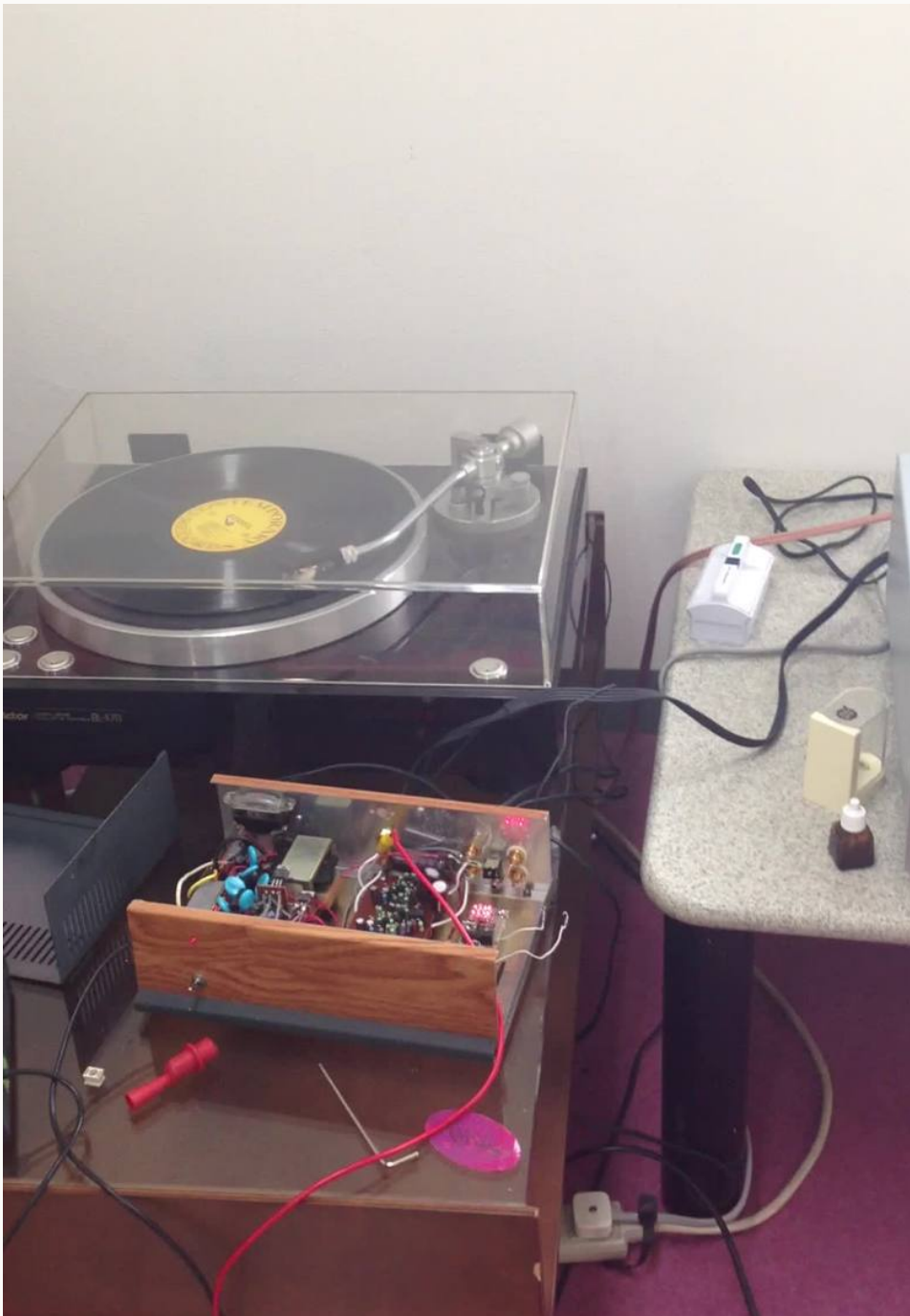
Then, once the control of the light and its relationship to the shading plate became stable, the problems began to fall away.

Top: a listening test, from footage shot at the time. Bottom: a hand-built prototype. Cantilever, shading plate, LED, photodetector, assembled one by one and listened to.



► Footage from those days (1:20)

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Mr. Hamaguchi

The equalizer Mr. Yamada used with his Toshiba cartridge had been built by his friend Mr. Hamaguchi. Mr. Yamada introduced us, and Mr. Hamaguchi agreed to build the equalizer for the optical cartridge.

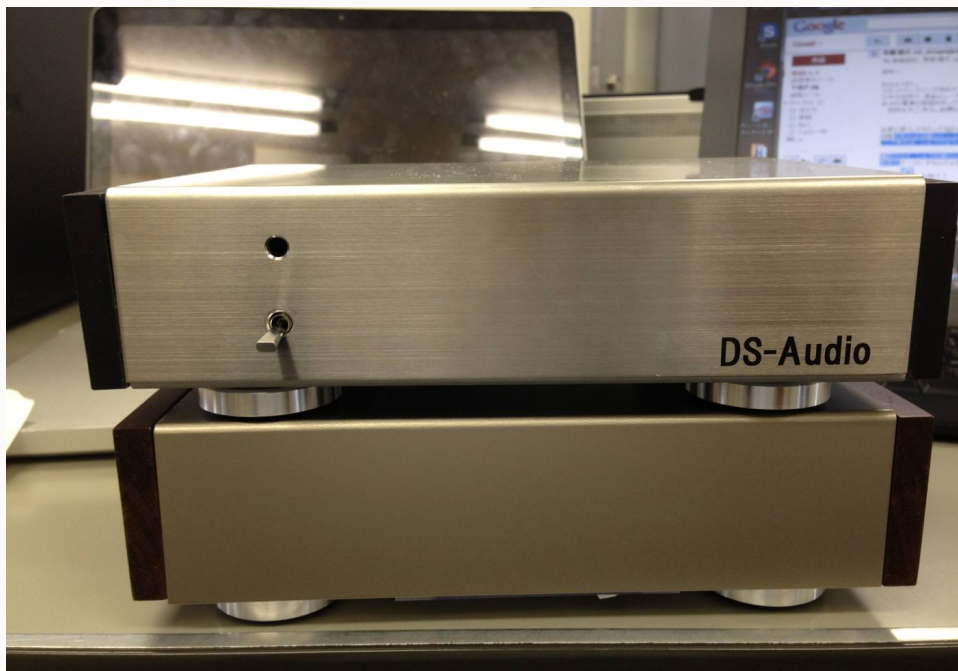
At the time I knew nothing about audio. I did not even believe an amplifier could change the sound. Why would a resistor change the sound, when the resistance is the same? Why would a capacitor? Mr. Hamaguchi ran the experiments one by one, let me listen, and taught me. Things I would never doubt today, I learned with my ears.

Separation and the other specifications a real product needs would not come together. The cartridge was not stable enough. Perhaps this could never match MC cartridges refined over decades. Was it really all right to keep going? When I was close to losing confidence, Mr. Hamaguchi said:

“This will be the best cartridge in the world. I have no doubt.”

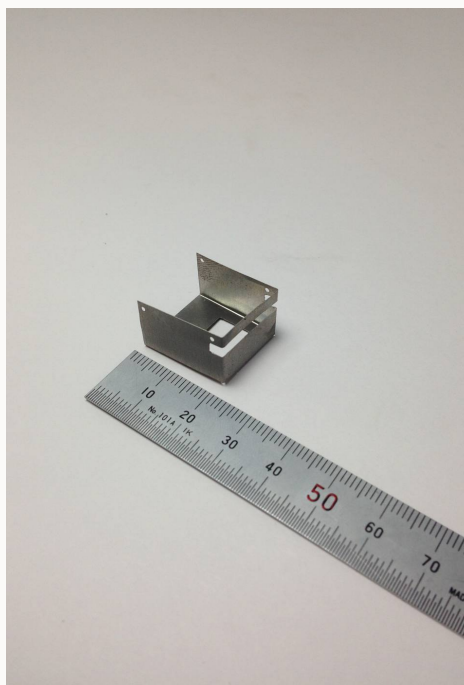
I still remember how much those words held me up.

The prototype equalizer Mr. Hamaguchi built in a wooden box. From footage shot at the time.

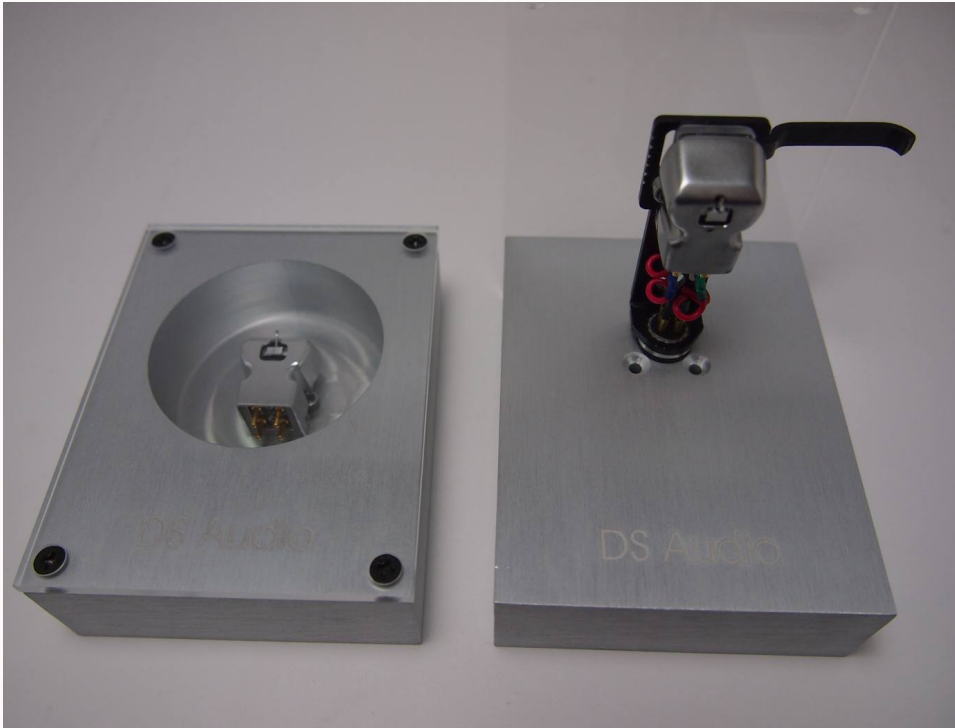


The equalizer went into an aluminum chassis for the first time, and the cartridge housing moved on to sheet-metal prototypes. Little by little, what had been hand-made began to take the shape of a product.

But I understood nothing about design in those days. How to decide on an exterior, what made something beautiful. Looking back now, some of what I made makes me shudder.



An early equalizer from before the logo was settled, a prototype cartridge in a sheet-metal housing, and a sheet-metal trial part.



2013, DS-001

October 2013, an audio show in Yurakucho, Tokyo. Our first exhibition. I had no idea whether anyone would be interested. Just once, put it in front of people. That was all I was thinking as I carried the DS-001 to the venue.

Once it began, far more people than I had expected stopped and asked all kinds of questions. What does it mean to pick up sound with light? What does it sound like? Everyone had the same puzzled look.

The price was 350,000 yen. I sincerely believed we would not sell a single one.

Thirteen years have passed. Today, more people than I could ever have imagined that day are listening with optical cartridges, all over the world.



Our first product, the DS-001, and our booth at the Yurakucho audio show, October 2013.



This is how DS Audio began

Looking back, it was a product of chance. If the cartridge that day had not been optical. If my yardstick had pointed to income or security. There would be no DS Audio.

And there were people. I knew nothing. Mr. Yamada, Mr. Hamaguchi, and many more than I can name here taught me and pushed me forward. And today, the colleagues in Sagamihara who build each cartridge, one at a time. Alone, it would have been impossible. Chance, a yardstick, and people. Without any one of them, the optical cartridge would never have become a product.

“I want to create something new that makes people happy.” That wish gave birth to DS Audio, and became the words Creating the future of analog music. You, reading this now, may be one of those ten from that day.

I want to create as many things as I can that make people happy.

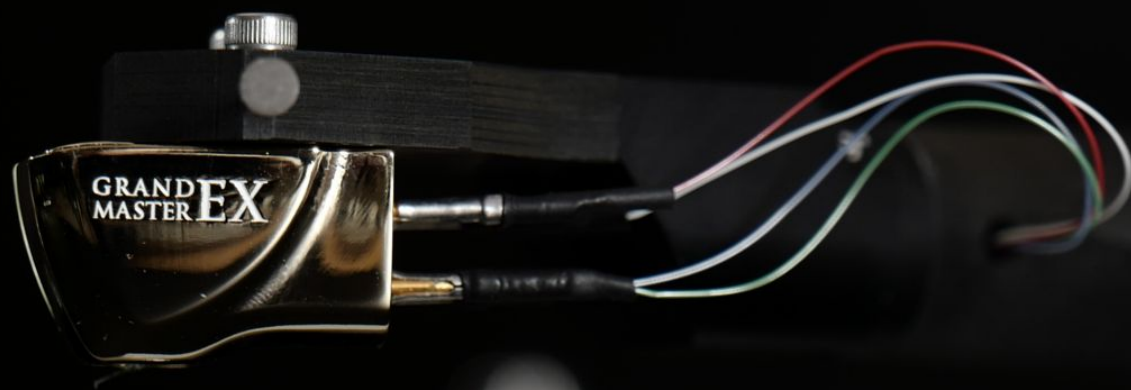
That wish has not changed by a millimeter.

Tetsuaki Aoyagi

Founder, DS Audio

DS Audio

Thoughts and questions are welcome at ds-audio.biz/contact.



► Footage from those days (1:20)

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