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Harmonic Technology Interconnects and Phono and Speaker Cables

I have long maintained a policy, broken only once in the past, of avoiding reviews of High End audio cables. Having worked as a technical writer for a manufacturer of these products, I perceived gross profit margins and I came to believe that most reviewers were assigning undue importance to a component that does not exhibit the same range of variances as loudspeakers or amplifiers. I also believed that the cable industry had taken a fundamentally wrong turn in rejecting the one technology that might conceivably have yielded a quantifiably different behavior in a cable – single-crystal conductors, also called “continuously cast conductors.”

Harmonic Technology happens to use single-crystal copper and silver across its line, and that, I must say, played a role in persuading me to undertake this review. According to the literature, the wire itself comes from China and is manufactured according to a process protected by a number of patents. Jim Wang, the president of the company, does not declare his conductors superior to those of other manufacturers of continuously cast wire, such as Ono, a well-known Japanese foundry specializing in this area, but maintains that it is far less expensive to produce with his proprietary manufacturing methods. Mr. Wang, unfortunately, is only moderately fluent in English, while I am completely innocent of Mandarin, so I could not explore the details of construction much beyond the fact that single-crystal is used along with some proprietary winding techniques, also protected by patents. The company also says it uses an unusual dielectric material to sheath the copper, but I could obtain little information on either subject. Mr. Wang suggested that the construction techniques he uses for drawing the cable precludes the use of Teflon, the dielectric of choice of most manufacturers. (See Manufacturer’s Comment, below, for information on these factors.)

The Crystal Mystique

Since Harmonic Technology’s technical argu-

ments, which I found convincing, rest largely upon their choice of materials, I will try to present the basic single-crystal argument, with a few asides concerning past controversies about this technology and my own prior listening experiences.

Noel Lee of Monster Cable once told me that there are really only two aspects of making an audio cable – geometry and materials – that is, how you arrange and space the conductors, and what materials you use in the construction of the conductors and dielectric. (If this were the case, then a cable following some common geometry and employing conventional materials throughout should be entirely ordinary in performance, but that’s another discussion.) Lee further commented that most American cable manufacturers stress geometry rather than materials, and that he was of that school himself. He made these remarks in conjunction with Hitachi’s much-heralded introduction of single-crystal cables in 1984. A number of the English audio publications were pronouncing Hitachi wire a revolution.

In a burst of patriotic fervor, I too raised my voice in ridicule of the upstart Hitachi wire. What could the low-end oafs at Hitachi possibly know about sound quality? But then one CES I passed by a Hitachi booth where the company had rigged up a switchbox to compare their own wire with something else.

There was indeed a big difference, much in favor of the single crystal, and I could spot it blind. Probably the set-up was rigged, I thought, but I took some literature reporting a double-blind test by a Japanese university that supported the company’s claims. A year later, I participated in a blind listening session held by a dealer friend. Hitachi beat the competition hands down. That did it. I bought the wire, crappy looking interconnects that looked like they should cost about a dollar a yard.

Subsequently I took a writing job with Marantz, working under technical director Richard Bell. Bell had designed particle accelerators for the Atomic Energy Commission

and written several seminal papers on the distortion mechanisms of transistors while he was a research scientist at ITT. He was one of the most impressive people I’d ever met in the audio field, and, as it happened, he was an authority on single-crystal copper, having been hired at one time by Signet to research it. Bell wouldn’t talk much about the project, he’d signed a nondisclosure agreement, but he stated emphatically that it supported the audible and measurable superiority of single crystal.

Later I found from reading an old MIT publication on vacuum-tube design that single crystal was nothing new, and had been used in certain design applications for over 30 years. But why was it better? To answer that question we have to turn to the theory of superconductors.

Ordinary conductive metals exhibit a crystalline internal structure with individual crystals of irregular size. The crystalline boundaries exhibit elastic effects in regard to electron motion, and electron collisions at these boundaries set up low audio-frequency resonances known as phonons, also referred to as “quantum noise,” though they are not noise in the sense of being random in nature. The intensity of phononic resonances is extremely low, but the argument is that it is sufficient to obscure low-level information in a recording or a transmission.

Simply put, the fewer the number of crystalline boundaries to be traversed, the less noise; and single-crystal copper, with boundaries only at the surface of the wire, should produce less quantum noise than garden-variety high-purity copper or silver.

Getting Connected

We don’t usually think of cables in terms of features, but Harmonic cables are fully featured – they’re dressed in such a manner as to enhance performance and facilitate set up and use. Phono, RCA, and speaker cables all come with Rhodium-plated locking terminations – optional in the case of the speaker cables. Mine had locking banana jacks, just recently made

available, but spades may be ordered as well. Single-crystal wire can develop cracks with excessive flexing, and to protect the individual copper and silver strands, all Harmonics cables are encased in stiff, heavy jackets. These make the wires somewhat unwieldy, but help protect the conductors. The phono cable is particularly interesting because it has separate ground connections for each channel – Decca cartridge owners take note and rejoice. This provides an added tool for combating the dreaded ground loop at the phono connection; I found that connecting one ground and not the other could in some cases minimize hum.

Uneasy Listening

Both the Harmonics speaker cables and the RCAs appeared to provide significant audible benefits. It was difficult to make fair comparisons between the phono cables and competing designs because the unique dual-grounding arrangement was so clearly superior.

My usual speaker cables are Goertz flat wire. I also have some Monster Cable Sigma. The differences between the two are those of frequency balance and clearly attributable to the Goertz' relatively high capacitance, an attribute of ribbon wire designs in general. The Goertz design is predictably brighter than the Monster, but differences are hardly day and night.

Rapid to and fro between either of the older cables and the Harmonics design, their top-of-the-line, two-strand cable, Pro-9 Plus, revealed differences that *were* day and night and that much favored the Harmonics. But the differences are hard to describe. On the remarkable new recording of Baroque chamber music on the German Tacet label, *The Tube* [L 74], performed by the Stuttgart Chamber Orchestra and made with vintage tube microphones and tape recorders, the differences were particularly striking. With the Harmonics cables, the recording fairly sang. Instrumental forces were meticulously delineated, and at the same time, an unflinching sweetness and musicality was evident, plus a sense of reverberant tail-offs sauntering away into a diffuse performance space. Plug in the other wire, and the reproduction became remarkably sour and astringent, and I had a definite impression that the performance space itself puckered up, almost as if in response to the sourness. This is a wildly impressionistic account, but the usual High End vocabulary having to do with frequency balance, focus, dynamics, and what have you, simply doesn't seem adequate.

Switching among moderately and not so moderately priced RCAs from Monster Cable, AudioQuest, and Accuphase revealed relatively little or no differences between the conventional designs, but major differences between Harmonics and everything else. In all cases, I put the interconnects under comparison on short splitters, momentarily turned off the inputs of the power amps, and made the switch within seconds.

I was astounded by what I heard with the Pro-Silway Mk II, which consists of copper and silver single-crystal strands. On an audiophile reissue of an original-instrument recording of pre-Corelli Baroque chamber music, *Hochrenaissance* [Archiv SAPM 0198166], the magnitude of the differences was more on the order of what one would hear with speakers of widely varying resolution than what I'm accustomed to hearing with cables. High-pitched instruments like bells and soprano recorders sounded much more extended, transients such as drum beats, seemed to have more impact even at lower volumes, let alone with level-matched, and the timbres of the instruments are far less inclined to bleed into one another. And, yes, the soundstage was wider. It was almost like comparing a mediocre box speaker with lots of cabinet talk and average quality cones with a electrostat like the big Sound Lab.

After a few back-and-forth comparisons, I gave up and settled back to leisurely listening over my tri-amped system with a separate pair of Harmonic speaker cables going to each set of drivers, and a sheaf of Harmonics RCAs connecting the passive and active line-level crossovers. This is an extreme system capable of impressive performance with the cheapest cabling, but with the Harmonics in place, there was an almost surreal sense of palpability to good recordings – audience comments overheard on live sessions, leading edges of transients leaping out like leashed Dobermans, and highly realistic proportions to instruments. On the new analog blues issues from Analogue Productions, such as *Little Hatch* and *Weepin' Willie*, the experience was especially rewarding, rendering these intimate recordings yet more tangible.

Review space is limited, and it would serve little purpose to rhapsodize ad infinitum. I suppose it would be instructive to compare these with cables costing thousands of dollars apiece, but I hadn't any on hand. As I explained at the beginning, I've always thought they represented a misallocation of resources, and I've put my money into basic componentry. I've always believed you should get the best electronics and loudspeakers you can, and only then think about cables and cones and other accessories. I still believe that, but now I can recommend without reservation a moderately priced connection solution that makes a bigger difference than any cable I've had in my system, including some costly ones.

Most cable purveyors buy wire readymade from bulk suppliers in Asia, wind it according to some formula that is supposed to add tremendous sonic value, put it in a fancy jacket with their logo, and charge you many multiples of what they paid for it. Harmonic Technology starts with the best and goes from there – and maintains a reasonable profit margin into the bargain.

DAN SWEENEY

MANUFACTURER INFORMATION

Harmonic Technology

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Prices: Pro-11 Plus – \$475/8-foot pair;
Pro-9 Plus (designed for bi-wiring) – \$888/8-foot pair;
Pro-Silway Mk II – \$399 with RCA termination;
CrystalSilver phono cable – \$600

ASSOCIATED EQUIPMENT

Sota Millennia turntable; Mission Mechanic pick-up arm;
Decca Jubilee phono cartridge; Danish Audio Connect and Boulder L3AE preamps; Wolcott Audio Presence monoblocks, Pathos Twin Towers hybrid integrated, Conrad Johnson MF 5600 solid-state amplifiers; German Physiks Unicorn full-range speakers; Elac 4 pi Plus omni-directional ribbon tweeters; German Physiks stereo subwoofer; German Physiks active electronic crossover; Harrison Labs passive line-level crossovers; Humfree groundloop eliminators

MANUFACTURER RESPONSE

Thank you for your enthusiastic . . . review. We appreciate your going out of your way to alert consumers to our products. I would like to clarify a few points:

- Our wire does not come from China. I don't believe that China has a single-crystal-casting facility yet. We do most of our work in Poway, California.
- The continuous casting for single-crystal cable processes is very expensive. Our products may be more expensive in cost compared with most other High End cable companies. We are a small company, and the reason we are able to keep consumer costs so low is that we maintain a very small profit margin.
- Each individual conductor is insulated with formed polyethylene (PE) to reduce strand interaction, which greatly increases signal-to-noise ratio and dynamic range. The dielectric constant of formed PE is better than normal PE (2.3) because it has many man-made air pockets. This kind of dielectric is better than commonly used Teflon. Also, Teflon dielectric requires extraordinarily high temperatures during the cable-manufacturing process, which can destroy single-crystal cable. We use only ready-made Teflon strips in our cable.

One further important factor in our products' superior performance is geometric design. The Balanced Field Geometry greatly reduces inductance and capacitance. For example, on the Pro-9 Plus speaker cable, we have four subgroups: two for the woofer, two for the tweeter. For each woofer subgroup, we have eight individually insulated 20 AWG single-crystal wires. For each tweeter subgroup, we have one 20 AWG, four 22 AWG, and four 24 AWG individually insulated single-crystal wires.

JIM WANG, PRESIDENT
HARMONIC TECHNOLOGY