



## Listening #23

By Art Dudley • Posted: Nov 29, 2004 • Published: Nov 27, 2004

When I was a boy, silent dog whistles were all the rage. They were sold mail-order from the backs of comic books, alongside whoopee cushions and sneeze powder and X-ray spex. The whistles aren't so easy to find anymore, but don't read too much into that fact. Don't read into that at all.

As a child, I could understand the basic human need to torment others and see through their clothing, but silent dog whistles were utterly lacking in appeal: What was the point? The theory was interesting—that some sounds are so high in pitch that *they can be heard only by animals*—but the product itself suffered a basic lack of demonstrability. Maybe we can't hear the whistle because it really doesn't make any sound at all. Dogs, after all, are notoriously eager to please.

Here's a parallel: Famous doctors all agree that the upper range of human hearing is 20kHz, tops. What possible use could I or anyone else have for an auxiliary loudspeaker that extends a music system's performance out to 100kHz? More to the point, why would anyone pay \$750 for such a thing?

Those questions were posed to me, in effect, when the people at Townshend Audio sent me their latest product to try: a little something they call their Maximum Super Tweeter (\$1500/pair). (The name may or may not be a play on words; Mr. Townshend's first name is Max.) This is an example of a relatively new breed: an ultra-high-frequency transducer intended to enhance the performance of virtually any existing home audio system, much as a subwoofer fills a similar but diametrically different need. The Maximum Super Tweeter extends a full-range loudspeaker's frequency response all the way out to 100kHz, or so the manufacturer claims, allowing listeners to take greater advantage of the high-frequency information available on SACD, DVD-Audio, and even very-wide-bandwidth, high-resolution formats such as analog tape and the LP record. (Townshend Audio products are distributed in the States by [EAR USA](#).)

Townshend's tweeter is a ribbon driver: a slender and extremely thin metal element that's suspended between two very powerful magnets and is driven by an amplifier through a matching transformer. (Such a driver ceases to be a ribbon if its metal element is bonded to a "host" diaphragm, at which stroke the thing becomes a *planar-magnetic*.) A ribbon's strong points are its general lack of coloration and, above all, its nearly perfect lateral dispersion. Its weak points are its need for a transformer—without which the very-low-impedance, coilless diaphragm is devilishly difficult to drive—and its tendency toward a sort of hysteresis distortion, given that its diaphragm is physically more well damped near to its anchor points than at its center, resulting in intermodulation distortion if driven over too wide a range of frequencies (although, in fairness, that's more or less true of all panel-type speakers). Because most of those weaknesses diminish in direct proportion to the radiating element's size, ribbon drivers are nicely suited to

high-frequency applications.

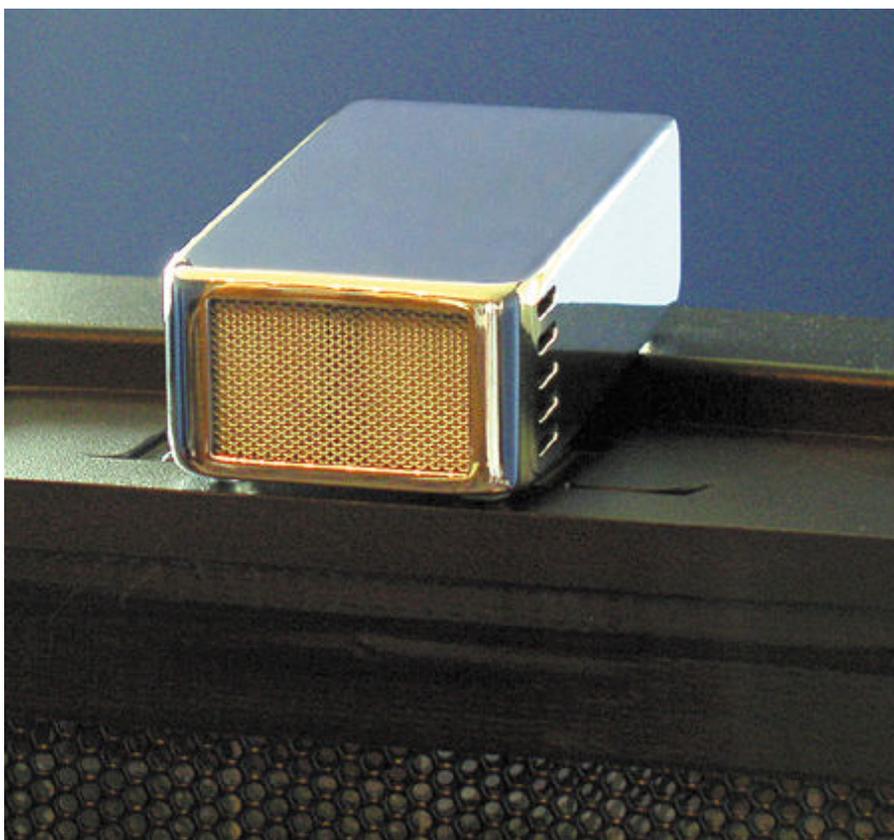
The Maximum Super Tweeter is built into a stainless-steel case that's polished to a mirror finish (titanium is also available) and measures 2" wide by 1.25" high and 4" deep. The enclosure is vented, presumably to maintain a more or less constant internal pressure (heat would not seem to be an issue), and the corrugated ribbon itself is protected by a neat-looking metal grille. A peek inside shows that element to be 0.2" wide and exactly 1" long, straddled by a pair of rare-earth magnets and their respective pole-pieces, themselves physically damped with slices of dense foam rubber. The matching transformer, which is actually the largest single component inside the case, is fastened to the rearmost pole-pieces.

There's a level control on the back of the Townshend tweeter, useful for matching its performance to a variety of home audio settings. This control, actually a multipole selector switch and a series of discrete resistors, offers a choice of seven different electrical sensitivities, from 80 to 110dB/W/m. A pair of capacitors in-line with the signal complete the tweeter's very simple, single-pole high-pass filter, the -3dB point of which is said to be 20kHz (although there is still some output below even 12kHz). Another capacitor in the system appears to be used for suppressing clicks when working the selector.

All the copper in this product, including the wire in the transformer and the Litz wire in the 1.5m connecting cables supplied with it, is said to be cryogenically treated, as is the aluminum ribbon itself. The connecting cables have 4mm banana plugs at one end and "piggyback" bananas at the other: Connected as directed, the Townshend Maximum Super Tweeter operates in parallel with your full-range loudspeaker. Cables with spade connectors are also available.

#### **Old Quad extension**

I'm not sure, but I think I was singled out to review the Townshend Maximum Super Tweeter because I own Quad electrostatic loudspeakers. Quads are regarded by some engineers and hobbyists as being comparatively deficient in high-frequency dispersion, a characteristic that varies from model to model.



This dispersion shortcoming is most pronounced in Quad's first loudspeaker, the original ESL, making that model the likeliest to benefit from Super Tweeting. (It's worth noting that the near-mythic Naim FL-1 electrostatic loudspeaker, which never saw the light of day in any commercial sense and about which many thousands of words will someday be written, was essentially a spec'd-out ESL bass and midrange loudspeaker with a ribbon tweeter on top.) So, in addition to using the Townshends with my own [Quad ESL-989s](#), I wanted to try them on a pair of original Quad ESLs. I was even more anxious to hear what a dyed-in-the-seersucker ESL veteran might think of them, so I turned to my friend and fellow Upstate New Yorker George Stanwick, proprietor of the audio distribution firm Stanalog—a man who has owned and enjoyed Quad ESLs for as long as I've known him (footnote 1).

I brought the Townshend tweeters to George's house for a morning of comparisons. Although I'm not familiar with most of the supporting components in his system, my goal that day was simply to hear if and how the Maximum Super Tweeters changed the sound when added to his Quad ESLs. To that end, George and his associate, Francis Milano, went to work setting up the Townshends. (Francis deserves extra credit for a mounting arrangement that held the tweeters atop the centers of the main speakers, more or less at ear level, while also providing a measure of immunity from intermodulation effects from the main speakers.)

With the tube amps warmed up and the tweeters in place, we settled back for a morning of Dylan and Elgar—the latter represented by a clean copy of that magnificent *Dream of Gerontius* by Sir Adrian Boult and the New Philharmonia (LP, EMI SLS 987). Without putting words in anyone's mouth, it's safe to say we were all impressed. The tweeters sounded best with their level controls turned to 2 or 3 (within a range of 1-7), at which they contributed a near-perfect dose of texture, color, and spatial believability—the latter by virtue of extra "air" and ambience. We all agreed that singing voices gained the most in realistic tone and sheer presence, although the three of us were equally impressed at how the Super Tweeters enhanced the presence, and even the

apparent dramatic range, of the large orchestral drum in the Elgar recording. At the same time, no one expressed any negatives: for my part, although I wondered if the Townshends might also reveal more in the way of grain or surface noise in that unfamiliar (to me) context, I heard nothing of the sort.

Back home on Turkey Buzzard Hill, things were mostly the same, albeit with a few key distinctions—all apparently related to the fact that my Quads and George's are very different things. In the original ESL, high-frequency propagation, such as it is, is handled by a narrow strip of a central diaphragm: Thus, to the extent that it's capable of dispersing high-frequency sounds at all, the original Quad does it in much the same way as any ribbon, with much the same pattern of dispersion. By contrast, my Quad ESL-989s use an annular ring pattern of stators, intended to mimic a point source rather than a line source—the highest frequencies thus emanate from a small area at the center of this comparatively large loudspeaker.

---

Footnote 1: The suggestion by a handful of beskirted biddies that audio reviewers must never have audio manufacturers as friends is laughable, beneath contempt, and ultimately quite sad.—**Art Dudley**



## Listening #23 Page 2

In other words, the new Quads are as different from the Townshend tweeters in their high-frequency dispersion as the old Quads are similar, and in attempting to maximize the performance of the Super Tweeters, I tried a number of ways to compensate for that fact—as I would with any product submitted for review. Of particular note, I tried mounting the tweeters *in front of* the Quad ESL-989s, perching them on speaker stands so that their ribbons were even with the centermost stators. That merely sounded peculiar. Even worse was having the tweeters on stands at the sides of the Quads: Inside or outside, the result was audiocide.

The arrangement that worked best, and on which my listening impressions are based, was with the Townshend tweeters on the *tops* of the Quads—rather like the setup at George's house, but with two refinements: I used the Quads' adjustable feet to tip the electrostatic panels back as much as possible, thus tilting up their own high-frequency dispersion, and I angled the Maximum Super Tweeters downward toward the listeners' ears.

I accomplished that last bit in a couple of different ways: The Quads' removable top plates incorporate a recess of about 0.4" at the front, providing an almost perfectly terraced surface for the tweeters and their own small, gummy feet (see photo). Also, when listening with the top plates removed altogether (necessary for removing the grillecloths, although you can replace the plates when you're done, if you want to), I set the tweeters flat on the structure beneath, then tilted them downward by placing kerfed strips of Spanish cedar under their rear feet. This also gave the loudspeakers a pleasantly peppery aroma, which may or may not have influenced my listening.

### **New Quad extension**

I found that the Townshend Super Tweeters could be made to enhance the performance of newer Quad speakers, although it's harder to do, and the improvement isn't quite as dramatic as with older Quads.

First, the Townshend Maximum Super Tweeters did no apparent harm. I heard no more hiss or surface noise than before, and I wasn't any more aggrieved by the noise that was already there. And while it's true that judicious use of the Townshend tweeters can enhance the Quads' spatial performance, the stereo imaging didn't become fussy or fatiguing. Finally, high-frequency sounds didn't take on any unpleasant colorations or characteristics: Used sparingly, the tweeters didn't make the sound hard or edgy or tiring.

In the case of the ESL-989s in my 225-square-foot listening room, "sparingly" means "with the level controls set at 4." That may be because my room is larger than George's, and my listening seat farther from the speakers. Or it may have to do with those very basic technological differences between the old and new Quads.

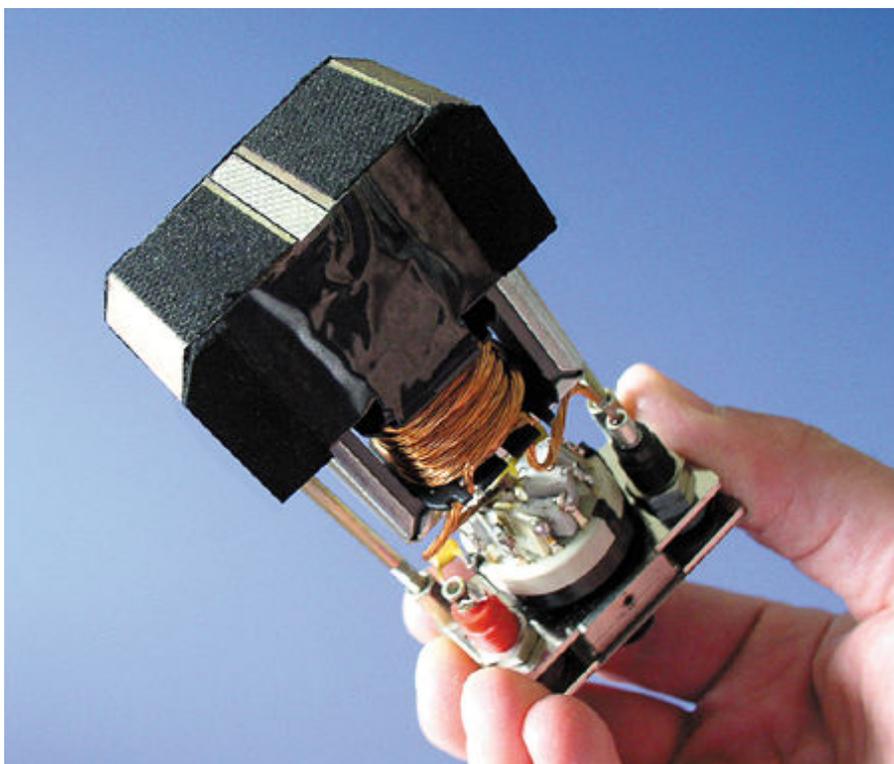
It may also be related to something else: different electronics. You can't forget that many

amplifiers will perform very differently into your loudspeaker load when the Townshend tweeter is a part of the equation—tube amplifiers more so than solid-state, and single-ended triodes *much* more so. In light of that, it's perfectly reasonable to wonder if the differences I heard between George's system and mine have more to do with amps than with speakers.

I'm saying those things not to muddy the waters—although that's always fun—but to underscore the need for a home audition before committing to this particular purchase.

In any event, the most significant improvement the Super Tweeters made to my Quads was, again, a greater realism in reproducing voices. I don't even have to consult my listening notes, because I remember so well how much more real Tony Rice's satiny voice sounded on "Home from the Forest," from his classic *Manzanita* (LP, Rounder 0092), a superbly recorded album that seems to reveal more of itself every time I make a real improvement to my system. Yes, stereo imaging and room sound were handled better with the tweeters, and, yes, the sense of detail and articulation seemed more refined. But all that paled in comparison to the wonderful gains in vocal realism.

Looking beyond the performance consideration, the Townshend Maximum Super Tweeter seems competently designed, and is certainly well made. I have to admit that I simply *liked* the tweeters as hardware, inasmuch as they have just the sort of size, heft, and polish that appeals to me. They look cool, and they're fun to hold. Hey, I'm 50 years old and have two college degrees and a spotless credit record, I don't believe in UFOs or aliens, and I don't read Isaac Asimov or Harry Potter stories—but even I find it hard to pick up one of these neat little devices without bringing it close to my lips and saying, "Beam me up, Scotty: It sucks down here."



Incidentally, if you think this sort of thing might improve your system, there are two other companies I know of that make supertweeters—although Townshend is the only reputable company that presently makes an add-on *ribbon*.

First is the English firm Tannoy, whose ST50 Super Tweeter is an aluminum dome tweeter of the

usual sort, mounted in an ovoid, die-cast enclosure. Its lower frequency is adjustable to 14, 16, or 18kHz, and its upper range extends out to 54kHz. US hobbyists can find Tannoy/TGI North America on the information superhighway at [www.tannoyna.com](http://www.tannoyna.com).

Second is Murata, who make two models: the ES103/AB and the ES105. The former is a hemispherical ceramic piezoelectric tweeter with a claimed response of 15-100kHz, supplied in a cylindrical die-cast enclosure of zinc alloy. The ES103/AB is pretty much the same thing in a differently styled enclosure, integral to which is a microphone stand mounting. Interestingly, the Murata tweeters' resonant frequency lies above their upper cutoff—at about 103kHz. Murata is distributed in the US by [True Sound](#) of Campbell, California.

Having now heard the Quad ESL/Townshend Maximum Super Tweeter combination, I don't think I could own and enjoy the former without also owning the latter. In that context, and with respect to Messrs. Stanwick and Milano, taking the Townshends away made the sound dull and constricted in a manner that, afterward, didn't seem to "correct" itself over time—whereas, with my larger Quad ESL-989s, although the tweeters' sudden absence was initially disappointing, I found that I got over it with greater ease. (Actually, I'd probably buy the Townshends for my own use if I hadn't already bought a new amp this year, and didn't plan on buying new kitchen cabinets before the year is over.) Owners of other insufficiently tweety loudspeakers, including but not limited to Magnepans, Staxes, Acoustats, and de-whizzered Lowthers (think ahead, think ahead), should also investigate the supertweeter genre and, in particular, give the Townshend Maximum Super Tweeters a serious spin.

### **The Amazing Artie**

Robert Zimmerman, Gordon Sumner, Reiner Frigyes, Roberta Joan Anderson, and Bill Harkleroad (footnote 2) all discarded the names they were born with in favor of newer, better ones, as their performing careers took off. Now we can add another name to the list: Randall Zwinge. Think of Zwinge as a brass player: He toots the same horn over and over, desperately hoping that the audience will notice him instead of the other performers on the stage.

Zwinge is an illusionist—a self-described liar and con artist—who discovered early in his career that he could make more money by debunking the work of other illusionists. So he reinvented himself as James Randi and hit the road as—èt ready for it—The Amazing Randi.

In one of those lucky-for-us-but-unlucky-for-him twists of fate, the bottom pretty much fell out of the debunking industry, and Mr. Zwinge came to realize that only a steady stream of publicity would ensure his continued income. So Zwinge the showman has been forced to hit the rhetorical road, as it were, moving from town to town, looking for new stones to overturn. Perhaps unsurprisingly, he has stumbled on our little world.

I'll spare you the details of the latest yawn-inducing and intellectually dishonest "Randi Challenge"—anyone who's ever heard of Shakti Stones can probably guess what it involves (footnote 3). My point in writing this is to issue a taunt of my own, which I hereby dub "The Artie Challenge." I will personally give Randall Zwinge a hundred billion zillion dollars of my own money if he can answer two questions *to my satisfaction*:

- 1) Why is it that a tough-minded seeker of the truth finds it necessary to change his name?
- 2) When he signs his name as "Randi," does he dot the "i" or draw a little heart over it?

Answers may be submitted to me via e-mail only, care of [John\\_Atkinson@Primediamags.com](mailto:John_Atkinson@Primediamags.com).

Thank you.

---

Footnote 2: Aka Bob Dylan, Sting, Fritz Reiner, Joni Mitchell, and Zoot Horn Rollo, respectively.—**Art Dudley**

Footnote 3: Something I find amazing about the Amazing Randi is that for such a thorough skeptic, he does not take care to get his facts straight. In discussing this magazine, for example, Randi writes that "The 'Tate Clock,' a regular Radio Shack digital clock treated with liquid nitrogen and a "secret process" to align electrons in the power supply (?) is only one of the products it tested and approved..." Let me see: the "Tate" clock is actually the "Tice" clock; while George Tice never let on what he did to the clock (if anything), it *wasn't* treating it with liquid nitrogen; and while we did test the Tice Clock, far from "approving" it, Stereophile's coverage was sufficiently negative that Tice canceled all of its advertising and ran ads instead in that then-bastion of audio respectability, *Audio* magazine. For my own attitude to such things as the Tice Clock and the Peter Belt devices, see the March 1991 As We See It."—**John Atkinson**