Subject: Re: transparency
Posted by Marlboro on Sat, 19 Sep 2009 02:35:08 GMT
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jp wrote on Wed, 16 September 2009 02:25Where does transparency and air around the different instruments/voices come from ? Drivers specs ? enclosure design ? cone material ? Etc..... wich does influence the most ?
I know this is a general topic but it could be specific to arrays since they are different !!
JP

Nobody has tried to answer the question. I hope others comment on my probably partly innacurate audio description for it:

Below in the words that define music, transparency is defined as:

Easy to hear into the music, detailed, clear, not muddy. Wide flat frequency response, sharp time response, very low distortion and noise.

If we look to find speakers that are widely known for transparency, one finds this:

Advantages of electrostatic loudspeakers include the extremely light weight of the diaphragm, and exemplary frequency response (both in amplitude and phase) because the principle of generating force and pressure is not as prone to resonances as in the operating principle of the more common electrodynamic driver. Musical transparency can be better than in electrodynamic speakers because the radiating surface has much less mass than most other drivers and is therefore far less capable of storing energy to be released later. For example, typical dynamic speaker drivers can have moving masses of tens or hundreds of grams whereas an electrostatic membrane only weighs a few milligrams, several times less than the very lightest of electrodynamic tweeters. The concomitant air load, often insignificant in dynamic speakers, is usually tens of grams because of the large coupling surface, this contributing to damping of resonance buildup by the air itself to a significant, though not complete, degree. Electrostatics can also easily be executed as full-range designs, lacking the usual crossover filters and enclosures that could color or distort the sound.

So what characteristics of a line array might flow here into transparency:

1. An electrostatic(magneplaner, Maggies for example) has extremely light weight diaphragm not prone to resonances.

A typical line array(either mine or pipe dreams, or the more current double woofer line Selahs) while not having a very light diaphragm, do have lack of resonances due to each individual speaker not playing a large enough percentage of the music, and thus loud enough, to produce un-natural resonances. In the case of mine or the Pipe dreams, the large number of dome tweeters have less than 3% plus the well known high transparency caused by low driving of domes, and in the case of Planars or ribbon on the Selahs, a similar circumstance exists as the maggie.

2. Wide flat frequency response: Most line arrays are exemplary for a wide flat response.

3. sharp time response: I'm not sure how this one fits but I suspect that the vastly increase sensitivity of a line array sharpens the response time

4. low distortion: distortion levels rise dramatically in all drivers as they are pushed. Line array drivers are never pushed and their distortion rates are always very low.
