Subject: Re: Comparison with Solid State Amps
Posted by Wayne Parham on Fri, 04 Feb 2011 23:20:12 GMT
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One thing that surprised me (greatly) was that when you compare devices, i.e. triode and bipolar transitor of similar power and gain, the distortion of tubes is often lower across the board. I'm not sure if that's discussed in the little taste of tubes booklet or not. I know Eric Mainardi and I talked about it a while back. Maybe he's who clued me in on it.

I always thought transistors distorted less than tubes, but that the spectrum of distortion was higher-orders from solid-state and lower-orders from tubes. I thought tubes clipped more "gracefully". These things are true, but that's not all. The distortion from a tube is actually less than a comparible bipolar transistor. That was surprising to me. I had never actually investigated it, and assumed that transistors distorted less. But that's not true.

What makes a modern solid state amplifier distortion be so very low is the amount of negative feedback that's used. The ultra-low distortion is a result of the topology, not the device. You can make a tube amp like that too, if you want. Add more gain stages and introduce a lot of negative feedback to reduce distortion. Of course, it makes the circuit more complex and need more tubes.

Tube guys are usually minimalists, so they prefer Class A (single-ended) no-feedback designs.