

GOOD NEWS FOR CBG ACOUSTIC BODIES?

Introduction.

In one of my articles I mentioned that my youngest son (40 something) is a very technical audiophile who constructs' all parts of his audio systems and mostly uses the old glass valve technology. He deigns to involve me when it comes to speaker building. I am always amazed at the sets of formulae that he uses to create just the correct size and baffles for the speakers and the system that he is making it for.

My math is hopeless but I have gleaned from him a few points that could well be applied to our cigar box body's.

Vibration versus reflection.

The thicker (within reason) he makes his speaker box the better he seems to be pleased with the results. This seems to be because the "driver" (speaker) vibrates the volume of air in the box and pushes the sound out (Oh dear, if he ever reads this he will be so ashamed of his father's lack of comprehension of his craft!) It would seem that if he makes the box too thin he gets vibrations from the speaker box that he does not want (something about phases? Perhaps even phase cancellation??)

Since coming to CBG making I have been tossing around quite few ideas that I have picked up over the years from making a variety of musical instrumentsso if you would bare with me I would like to make If I could briefly make some comparisons: A lutes ribs are quite thin; you will know that they make a gracious, multi-faceted curved vault for the body of the lute. The lutes soundboard is similarly thin to that of the ribs. (This is a generalization) On the other hand a guitar has a thin sound board (say 2 mm approx) but its sides and back is much (comparatively) thicker (say 3mm).

I would like to suggest that the lutes ribs, being focused (via the facets) as they are towards the sound board play a valuable part in the production of air vibration within the body. The guitar on the other hand has thicker sides and bottom to reduce vibrations, leaving the soundboard alone to react to the various air pressures within the body.

The lutes ribs are allowed to vibrate (except when they are pressed up against the players body!) But the guitars sides are restricted from vibrating. The reason why seems to be for the same reason that the speaker boxes should not vibrate, because of phase cancellation. I have mentioned this in one of my articles when talking about sound holes.

So what?

Good question, I am more than out of my depth with the physics of sound reproduction, but I do read that modern guitar manufacturers are experimenting with things like carbon fiber bracing and even thickening up the lower sides of the guitar body. It has been suggested that they would make the sides of the guitar even thicker if they could bend the thicker wood!

[just as an aside I bent 6mm thick wood for my Greenland skin on frame style kayak]

Conclusion.

It is so nice to have something nice to say about the acoustic properties of a Cigar Box; yes, from me who spend so much time and effort trying to improve upon them! You will be totally amazed that this is great news for the CBG maker as we already have thick sides to our box body's. I am certain that we should remove any loose linings some boxes have or glue them in firmly; but along with this we should possibly try to thin our soundboards so they act a bit more like the drivers of the loud speakers of the audiophiles. Their speaker cones are made of cardboard of course and that would be hopeless for us, but bit of judicious thinning can only bring benefits.