

Bang & Olufsen Mediacenter

High resolution images of Bang & Olufsen's products may be downloaded free of charge from: <http://mediacenter.bang-olufsen.dk>.

Please note that if it is your first visit to the Mediacenter, you must choose "Register as a new user".



Tonmeister Geoffrey Martin

Listen up!

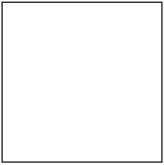
Meet Geoff Martin aka the Ear aka the Tonmeister. He is here to listen and to complain a lot. As one of the fathers of the Bang & Olufsen Advanced Sound System for the Audi A8, he recently emerged "mildly pleased" from the car where he had spent three months tuning the automotive audio system. In this interview, he explains how come nitpicking is an important part of his job, and how he decided to live in a car for months on end when he considers car-fi to be the epitome of poor sound.

Factbox:

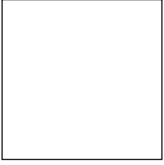
Geoff Martin was born in Canada in 1969. He did his Bachelor of Music from 1986-1990 at Memorial University of Newfoundland. He majored in pipe organ, which he describes as a boring instrument to listen to, but a great instrument to play. In 1990, he moved to Montreal to have a go at the Master of Music in Sound Recording programme at McGill University. Having successfully completed this internationally-recognized tonmeister education, he spent two years working at the University of Ottawa as a technologist in the Music Department.

After Ottawa, he went back to McGill to work on his Ph.D. Here he met Søren Bech, who is Adjunct professor at the Faculty of Music at McGill and also Senior Technology Specialist at Bang & Olufsen. In September, 2002, he started working for Bang & Olufsen and so became a Danish resident. So far, his day-to-day work has primarily revolved around developing DSP algorithms and running listening tests for prototype automotive audio systems. He recently moved from the Automotive Department to the Acoustics department where he is currently involved in various long term research projects.

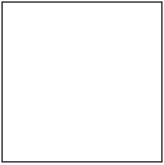
- Yeah, it's funny, but that also means that it's a really interesting challenge. The good thing about car audio is that although it's really, really bad – meaning that the speakers are all in the wrong place and everybody is sitting in the wrong place – the good thing is that it's very controlled. Nobody moves the furniture, nobody is going from the kitchen to the living room, and I know the size of the room. I have never considered myself a control freak, but if I were, it would be a good situation to be in. In a car, everybody is sitting in the wrong place, but at least I know where they are. I can do enough processing to the sound to make some corrections for those errors, and come pretty close to what they should have heard in a good system at home.



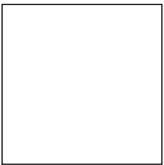
This is as good as it gets with Geoff. He is not going to get more upbeat about the award-winning sound system than that. Let marketing do the sweet-talking, then Geoff will take all the setbacks in his stride, like background noise for instance.



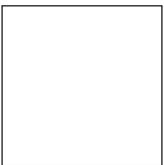
- Background noise is just a nightmare. No matter how quiet the car is, it's noisy. But then again, I come from a world of recording studios where any noise, the noise in this room, the noise from the air conditioning, is far too high to do reliable listening. So, a normal living room is too loud for me, let alone a car doing 200 km/h on an Autobahn. It is interesting talking to the people that market the Advanced Sound System because their job is to say it delivers perfect sound in a car, but my job is to say we have got a long way to go before that happens. If I think it's perfect sound, then there is nothing for me to do next time. So, a big part of my job description is to be perpetually dissatisfied, which is a strange situation to be in. But I guess it fits my personality, so it's okay.



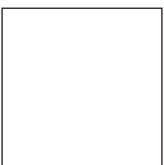
And while he is only joking when he describes himself as a nit-picker, there is no denying that he is something of a perfectionist. Even though pure sound is not a realistic goal, it remains Geoff's ultimate goal. And that, of course, is the reason for his perpetual dissatisfaction. But how then does he define perfect sound? To Geoff, perfect sound is nowhere to be found if not in the recording studio.



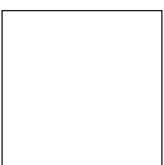
- When I worked on the Advanced Sound System for the Audi, I wanted to be able to hear the same thing sitting in the car as the mastering engineer heard when the CD was mastered.



My opinion is that we have to duplicate what is heard in the recording studio, and that there is no point in even trying to duplicate the sound of the concert hall because the recording never tries to do that. If I am hired to record an orchestra, I am not going to sit behind the console, and try to make it sound like it does in the concert hall anymore than a movie director tries to duplicate real life. It has to be better than real life. A movie speeds up, or slows down real time to make some artistic statement about what real life is like, and that's true for recordings as well.

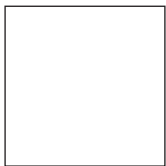


So, this is why I never even bother trying to make the car or the speakers sound like real life. They should sound like what a pair of professional loudspeakers sounds like in a recording studio. So, the goal for perfect sound is to go back to the mastering studio, and listen to the music with very carefully set-up speakers.

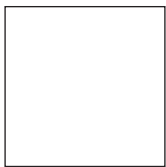


In other words, the listening conditions should be as good as possible, and the sound should be as close as possible to the sound heard in the mastering studio. Nonetheless, Geoff has gone on record as saying that sound is something utterly subjective. So, how then does he go beyond this subjective bias in his work?

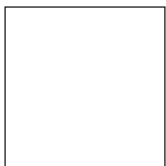
- I really think that sound "quality" is completely subjective. What we are talking about here is what you prefer - what do you like? You can go to the best French restaurant in the world, but if you don't like French food, you won't enjoy it. That does not mean that the food is bad, it just means you don't like it. So, there is no point in eating there. I think the same is true for audio. It's more important that you like a pair of speakers than it is for them to be "good," whatever that means. Just because they are good, it doesn't mean that you have to like them. So, you should buy what you like rather than what somebody else says is good. And hopefully, everybody likes the same thing, and that might be one definition of quality.



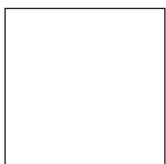
However, Geoff is well aware that this is no guarantee. As he points out himself, most people like fast food, but that does not mean that it is good food. So, actually, he and the rest of the research and development team are less interested in people's preferences than in their perception of sound. For while it is not possible to objectively describe how good a product sounds, it is in fact possible to give an unbiased account of how (e.g. bright or boomy) it sounds.



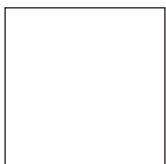
- We are not so much trying to predict preference. We don't really care about preference. What we are trying to do at the moment is make a map. A good example is coffee. If you have two cups of black coffee, but one has two teaspoons of sugar and the other doesn't, and you get ten people to taste these two cups of coffee, they'll all tell you that the one with sugar is sweeter than the one without sugar. This isn't a subjective opinion. It is an objective measurement of how they perceive it. They are telling you how they perceive it - how it tastes. And we'll agree that one is sweeter. We may disagree about which one is better, but we'll agree that one is sweeter.



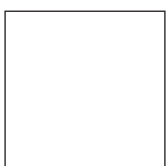
Typically, they won't say that one has more sugar. They'll just say that it is sweeter. So, they don't give you a recipe, but that is exactly what we are trying to do now within Bang & Olufsen. We are trying to make the map between physical measures such as frequency response, which is like a measurement of how much sugar we have put into the coffee, and people's perception of the sound, like the description of how sweet the coffee is. We want to make the map between these physical measurements and the perceptual attributes.



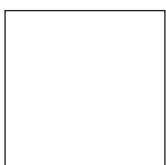
So, to Geoff, it is essential to know both how much sugar is in the coffee, and how sweet it tastes. In other words, it is nice to know how much sugar is in the coffee, but you do not really know how sweet it is till you taste it. None of this tells you how good the coffee is, but it gives you something to work on. And that also goes for audio products. It is nice to know the measurements, but you also need to know how the products sound in order to reproduce and develop that sound. So, in fact, producing the "Bang & Olufsen sound" is a matter of reproducing the same set of measurements over and over.

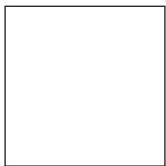


- What we are really concerned about is how the perceptual attributes map back to the measurements. And how can we make changes to products or even come up with products that have those same perceptual attributes even though they measure differently. If we come up with a totally new speaker, but we still want it to sound like our current product line, then we need to know what makes our current product line sound like it does. It is not just a set of measurements because the measurements are in fact different from speaker to speaker, but people will still talk about the "Bang & Olufsen sound". So, we want to know what that means, and how we get it the next time.

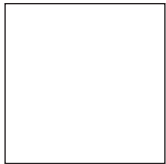


The other advantage in having that map between the measurements and the perceptual attributes is that if people say a speaker sounds too bright, then we need to know what that means and how we can go back to the engineers that are building the speaker and tell them to reduce its brightness. How do we do that? We don't have a brightness knob on our measurement equipment. So, does that mean distortion or frequency response? What do we look for when someone complains about brightness or harshness or boominess or punchiness? We need to know what that means, and how to fix it.

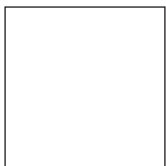




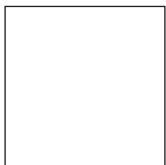
This approach to pure sound then combines tech sheet measurements with more or less objective perceptions of the sound. The tech sheet is like a recipe, but it is the perception test that tells you how the product actually sounds. So, you need to be able move effortlessly from the specifications to the perceived sound and back again in order to even come close to perfect sound.



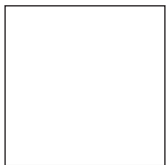
But, of course, there is much more to a Bang & Olufsen product than pure sound. The trick is to combine good sound with a host of other values, and according to Geoff no one does this better than Bang & Olufsen, which is some praise coming from this born sceptic.



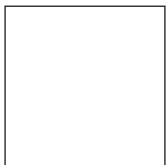
- From my point of view, a given speaker is comprised of a bunch of things. One is how good does it sound, but another is how good does it look, and another is how easy it is to use. And all of those things are mixed to decide how good is the product, how good is the speaker. If it was the best sounding speaker in the world, and it was ugly, then nobody would buy it. If it was the best looking speaker in the world, but didn't sound like anything, then nobody would buy it. So, the final product has to be some combination of these things.



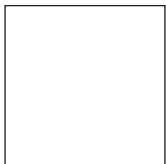
I don't know any other company in the world that could make a speaker that looks like ours sound as good as ours do. That is not to say that another company could not make a better sounding speaker, but it would not be piece of pipe like the BeoLab 8000. If you look at the design of most of our loudspeakers, you would simply think "forget it, it is not even worth trying." So, if you listen to what comes out of our designs, it is incredible that they sound as good as they do.



At this point, Geoff detours into pure sound again. On the one hand, he sees the Bang & Olufsen designs as challenging and creativity inspiring. On the other hand, he would like to be given free reign in his search for perfect sound – for a while at least.



- Stravinsky once said that the only way to be creative is to have limitations, and I think that is very true. Without that challenge and the limitations, I don't know what would happen. I definitely don't know any other company that could make speakers that sound like B&O's given the way they look. But it would be interesting to see how far we could go if we weren't limited by that piece of pipe.



To some extent, the BeoLab 5 is an indication of that, but I would like to go even further, and really see what we can do. A bit like the big car companies where they just let a team go, and tell them: "you've got a year, build what you want to build and let's see what comes out on the other side. It is not a product. It'll never be a product. Just go build something, and see what you come up with." Potentially, some things can come out of that process that are very interesting.

Given that this is his urge, I guess it is a good thing that Geoff recently moved to the Acoustics Department where he is currently doing long-term research. Needless to say, it will be interesting to see what comes out of that process, whether he will build Bang & Olufsen a monster speaker or something a bit more marketable. One thing is for sure though, it is bound to sound good, and Geoff himself is going to be nowhere near as pleased with it as the rest of us.