Room Wonder – Shakti Hallograph

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“Burn it! Burn it!“ Shortly after Leonard Bernstein conducted at the opening of the new Munich Philharmonic in Gasteig in 1985 these words kidnapped him. Millions had been spent, famous acoustic engineers had been engaged and the final result was a concert hall that was a disaster for most listeners.

The musicians couldn’t hear each other and only the first few rows of the audience could detect something similar to musical energy in the auditorium. What the rest of the audience heard was a sloppy mush. Solo evenings were an absolute horror.

I once experienced Vladimir Ashkenazy as he flailed about on his grand piano in a futile attempt to coax more sound out of it. It was hopeless – the hall swallowed everything. In the following years, millions were spent to install special acoustic elements made of wood and plexiglass and the sound improved somewhat, at least for the musicians and the middle of the audience.

Room acoustics are a complex thing, and when builders and architects have their own concepts – so much for protecting the honor of acoustic engineers -, soon nothing works like it should. Fact is, besides the Boston Symphony and the new Disney Hall, designed by star architect Frank Gehry, there is not one really good-sounding modern concert hall in Los Angeles.

It’s no wonder that even with many well-intentioned suggestions from professionals about room acoustics that the results are often questionable to depressing. Really depressing – most of the rooms
I’ve heard didn’t just sound one-sided over-muted and robbed the music of its’ natural sound and life,
they caused a nearly unpleasant claustrophobic feeling – something that the ears sensed as being very
unpleasant, even depressing.

I confess, it’s easy for me to talk. My listening room is more or less optimal, from the measurements to the materials used. There’s no need for improvement of the acoustics. But what should someone do when the ceiling is too low, the speakers can’t be placed far enough from the wall, cement is directly under the floor covering and other acoustic horrors? First of all, I suggest not to listen to the problem area an work on it so long until it gets worse. In most cases it starts to sound unnatural, from bass tuning it often becomes too dry and empty, from overcompensated echo problems it becomes strangely unbalanced.

And why are the results usually so? Because traditionally in room acoustics, not enough thought is given to how our ears work . Two aspects are especially important: our hearing is very sensitive to the origins of sound. And it hears the sounds first as the main source and focuses on it. Instinctively, it used to be important to located the sound immediately, where a potential

enemy or even a hunted victim can be heard. So it's understandable that a person reacts stressfully to the infinite number of sound reflections that exist in normal rooms

From this point of view it becomes clear that our sense of hearing didn't develop with a very specific and unbalanced damping or different ratios left and right. And also doesn't react positively to those conditions. What would happen if we would think a little less linear and not immediately dampen or scatter, which would be acoustically effective, but would irritate our ear?
Then one could – and here we come to the principle of the Shakti Hallograph – get the idea that problems caused by chaotic wall echoes in most rooms shouldn't be dealt with point by point, but should be blended out of our hearing. If you, dear reader, have seen the picture of Shakti's Hallograph, you probably thought: "Is he crazy? He's trying to tell me that he's attempting to eliminate all the wild sound reflections in a room with these three wavy wooden things?"

Of course I reacted the same way. However, I had the opportunity to follow up my skepticism with a quick test which resulted in unbelievable astonishment. Unbelievable astonishment – I was completely bowled over, my brain greedily drank in every impulse that my ears delivered. I felt like a research scientist that in a single flash of thought knew he had made a huge, earth-shattering discovery. Only in this case, I received the reward immediately: a reproduction of the music that all at once was lifted up to a higher level of quality like I never remembered experiencing before.

The Hallograph didn't just provide a better sound, like a better amplifier or a neutral cable, it also banned coloration of the sound into the past and brought unheard details and musical colors, musical relationship and a new soundstage presentation into the present. The effectiveness of the Hallograph seems to be contrary to its' modest appearance. But, that can all be explained.

No, it was even more. Shakti's Hallograph transported me from recording to recording into the center of the music. Sometimes I was the trifling, tinny microphone of a live band, sometimes I sat on the mixing board full of various sound ideas, and then found myself, more amazingly, in the body of a grand piano with keys to the left and right of me. To sum it up: I heard all spatial information that I knew from my LPs and CDs, but I didn't register that information through my brain. Instead, I heard it directly from inside the center of the musical experience.

And after a while I realized that something had happened that hadn't happened to me for a long time: I was fixed on one single acoustic factor – the sound stage. Otherwise, it's habit, after decades of nearly daily practice, to pay attention to all aspects of the sound. Now I was so drawn into the sound stage that it took me a while to hear the wonderful, smooth, captivating bass and base sound. And the silky-smooth voices and instruments – how they realistically and quickly responded, and made every sound much clearer. It also seemed that everything was a little bit louder, with more expanded dynamics. Later I noticed that by using the fine adjustment Linn pre-amplifier Climax Control, depending on the software, one needs 2-4 steps on the volume control to get the same volume as without the Hallograph.

The Hallograph uses the unique, instinctive characteristics of human hearing and, in doing so, tricks the wall echoes.

These results, that all together deliver an extremely improved feeling of "being there" to the ears, call for a closer examination of these miraculous things called Hallograph. What did Ben Piazza in his ten years of development time really created ?

The retro-futuristic looking „Sound field Optimizer“ are 6 foot x 16 inch x 12 inch and weighs 8.4 lbs each. The most interesting parts are the three wavy pieces that are each made up of two different lengths and various types of wood. If you tap on them, they sound very different. The light-colored wood is fir and the darker wood is an African hardwood from the ebony family. When I asked if it was Mpingo wood, which is already known for its use in acoustic solutions, Piazza said no, because the Mpingo wood sounds too bright to be used in the Hallograph.
On the back, behind the wavy tines there are long, curved rectangular boards made of ash. And to add to the geographical diversity of the wood, the stands are made of European birch. If you take a closer look at the wood construction, you notice that the stands become thinner towards the top and nearly all edges are rounded.

Especially the wavy elements made of two types of wood are very specifically designed: towards the back they have a sharp edge and towards the front they are rounded. The straight area makes up about half of the 1 ¼ inch wide element.

From the back, you can see that the back area of the wavy rectangular tines don't lay directly on the tines, but are separated from them by a rubber layer. Piazza said that they are hollow inside and are filled with a material that he keeps secret. Since the patent application is pending, he is very closed-mouthed about exactly how this works, but uses this design to modify the frequencies, amplitude and timing of the reflector.

But exactly what should, what do the Hallograph do? It's clear that they work as diffusers, with the many wavy surfaces. Sound waves striking the Hallograph, as opposed to most of the other surfaces in the room, are dispersed throughout the room like from a spray. The Hallograph are comparable to the decorative wood carvings in old concert halls.

I remember a discussion about the Gasteig Philharmonic, during which a professor of acoustics said that without these elements, there would be too many surfaces for a natural sound. As diffusers, the Hallograph are more effective than elements like egg cartons mounted on the walls. While those create acoustic "whirlpools", by using water as an example, one can imagine that the tines of the Hallograph work like a propeller and "pulverize" the sound waves.

But why use various types of wood when the surfaces of the Hallograph are already such effective diffusers? Now we get to the heart of the matter. The wood surfaces, especially the black hardwood is so dense that it reflects sound waves nearly as fast as metal, faster than walls. And that means that the sound from the Hallograph reaches our ears before the reflections from the walls of the room.

When one remembers that human ears always perceive the loudest sound source as the main source, then one understands the principal: the diffuser-reflector elements from Shakti take the place of the walls of the room!

The reflecting surfaces must not be large in order to be perceived by our brain as the first and only source after the speakers. Ingenious ! This is a construction based on the age-old functioning of our sense of hearing, to eliminate the wall reflections in the listening room from a subjective point of view.

Of course, otherwise, the reflections from the walls overlap with the spatial information on our sound source.

As acoustic experts know, our sense of hearing discerns reflections occurring directly after the origin of the sound as being simultaneous with the original sound, in this case, together with the sound from the speakers. This increases the volume perceived by the listener. That is the explanation of why the music seems to be louder when using the Hallograph. Therefore, the volume can be reduced, which helps to minimize the harmful room resonances.

In the results using the Hallograph, we hear much more from the speakers, since the sound from them will hardly be overlapped by the room reflections.

If you, dear reader, like myself, understand somehow the basic principles, but your common sense keeps telling you “that’s impossible - such a little thing should be able to do all that?”, then I can put you at ease: after the first listening session your doubts will definitely disappear.

The improvement in the sound is so huge and as wonderful as described in the beginning of this article. In other words: anyone who isn’t able to hear the improvements from the Hallograph is either deaf or dead.

Of course, the effectiveness of the Hallograph is heavily dependent on that quality of the original sound. If there is too little spatial information on the recording, or if the system isn’t capable of reproducing the sound, there won’t be a fantastic sound stage with the Hallograph either – the Hallograph doesn’t add any effects. On the other hand, the Hallograph definitely will improve nearly every other parameter, including the bass. In this case, it’s not only the clearer overtones that help, but also the stands. With their height of 121 centimeters – nearly half of the wavelength from floor to ceiling – they can act as diffusers of the upper bass frequencies.

I tested the Hallograph is several different rooms and I was not the only one who was constantly surprised at how impressive they function. I especially remember a test I did at a friend’s house with a small, fine system in a small room that measure about 18 square meters, in which the speakers stand very near to the walls. In this room, we couldn’t place the Hallograph in the corners and to the left and right of the speakers, as recommended.

In spite of that, the positive effect was overwhelming. Especially in orchestral recordings – the rear wall nearly disappeared, the sound stage seemed to be deeper than the room, instruments could be heard in their real places and now communicated audibly with one another.

Here, as well as in other room, it became obvious that it isn’t necessary to have perfect placement for the Hallograph if it isn’t possible. However, you should be careful to place them symmetrically left and right. After that, you can experiment with the Hallograph by moving it in a radius of about two centimeters.

Regarding the angle of the Hallograph, in my listening room the optimal position for most recordings is straight-on towards the listener. But there are certain recordings that either seem too pressed between the speakers, or others that seem too wide and with an acoustical hole in the middle. In these cases, a small rotation improves the sound immensely.

One good example of this is Hélène Grimaud’s interesting recording of Beethoven’s Storm (DG 471 769-2):
The recording, which is much too broad and bright, profits enormously from a slight inward rotation of one mark. The grand piano no longer suffered under broad spread-out, the sound wasn’t too bright anymore, but rather rounder and clearer. At the same time, the attacks were

much quicker and more precise, and with better rolling low tones, the storm was much more effective.

My summary of Shakti's Hallograph is short and to the point: Besides a good basic system, the Hallograph is the most important accessory that I know of. Listen to the number "Fever" by Elvis to find out why this miracle component from Ben Piazza gives me such a musical fever. The Hallograph is the fulfillment of long cultivated musical dreams.