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Subject: Ceiling in concert hall

Posted by [Jungle](#) on Mon, 26 Mar 2018 19:47:31 GMT

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I recently went to see a symphony and I kept getting distracted by the ceiling. It's aesthetically pleasing to look at, but I was also very curious about why it was designed this way. I've seen the triangle setup before along with the sort of "wavy" ceiling (that's not the right word, but it will have to do). Since it's for a concert hall, I assume there must be some kind of acoustical advantage here. Could anyone explain it to me?

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### File Attachments

1) [Chrysler-Hall-Interior.jpg](#), downloaded 788 times

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Subject: Re: Ceiling in concert hall

Posted by [Wayne Parham](#) on Mon, 26 Mar 2018 21:30:09 GMT

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You will notice the expansion from the stage, which helps project the sound, sort of like a horn or megaphone. It does more than provide a direction to the sound, and actually even helps the transfer be more efficient by impedance-matching. This is a moderately complex topic, but essentially what it does is make a small vibrating source (like instruments and mouths) interface better with a large environment. Also, the expansion shape tends to reduce reflections from being directed towards the listeners and the occasional breaks in the surface provide some diffraction that further softens reflections.

The best halls are made this way. I can't stand it when I see a new venue made that's excellent in architecture but terrible in acoustics, which seems to be the way so many modern performing arts venues are made these days. Even though amplification is relatively cheap, there is still a huge benefit in making the venue acoustically better because anomalies caused by reflections can't be cured with electronics. Intelligibility and sound quality suffer no matter what kinds of sound gear you have if the concert hall is poorly designed, with surfaces at the sides and rear that reflect sounds back towards the listeners.

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Subject: Re: Ceiling in concert hall

Posted by [TheRepublic](#) on Wed, 28 Mar 2018 01:13:31 GMT

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The first time I saw a venue with that kind of ceiling I thought it was just a cool design. I was a teenager and that exemplifies the depth of my thinking at that age. I started realizing it must be for

the acoustics once I saw it in a few more places. Like Wayne pointed out, I don't think nearly enough venues make this a priority. It's not like it's an eyesore either. If a place is being built for the performing arts then acoustics should be the top priority.

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Subject: Re: Ceiling in concert hall  
Posted by [Madison](#) on Tue, 03 Apr 2018 17:37:10 GMT  
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Wayne Parham, thanks for that detailed explanation. I had no idea that the intricate ceilings and walls were more than fancy design work. I'll point this out to my kids the next time we go. Thanks!

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Subject: Re: Ceiling in concert hall  
Posted by [Jungle](#) on Wed, 04 Apr 2018 00:39:21 GMT  
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Not to sound too repetitive, but I have to say exactly what Madison did: Thank you very much for the detailed explanation. Now I want to go back so I can appreciate it more fully. I don't get to see that kind of ceiling very much. I guess I must be haunting newer venues too much.

Republic and Madison, I'm glad to hear that I'm not the only one who wasn't aware of all the acoustic genius behind these structures.

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