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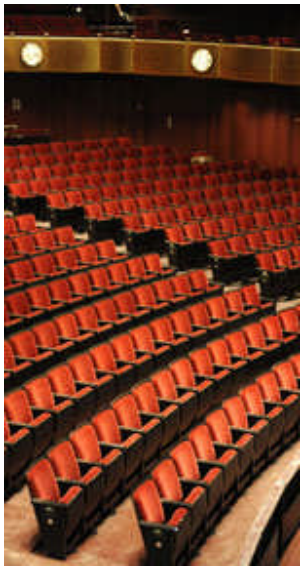
Q&A WITH MARK HOLDEN

By Ellen Lampert-Gréaux



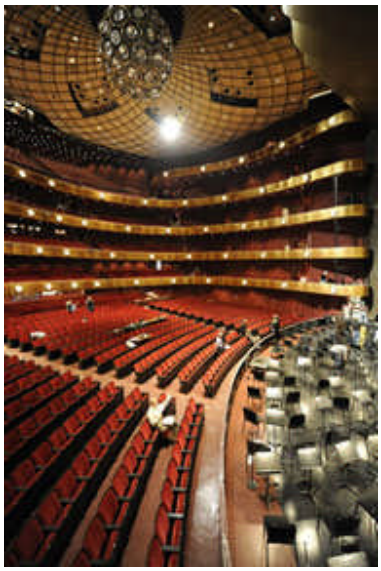
Leading acoustician Mark Holden of JaffeHolden has been instrumental in the renovation process at Lincoln Center. From Alice Tully Hall to the David H. Koch Theatre, Holden discusses acoustic issues and their solutions:

1) **How does a major performing arts complex like Lincoln Center end up having acoustic issues? How does a hall become a "great" room for listening?**
I think the short answer is that when these buildings were built back in the late 50's and early 60's acoustic science was in its infancy. While there was something known about sound and how to achieve success, getting architects and the owners of the buildings to follow an acoustician's advice was almost impossible. So while acoustic advice by BBN, Keilhotz, and Jordan was at times followed, often it wasn't.

I say great rooms for listening have a few things in common- they are visually elegant and beautiful, comfortable, and have the full participation of the acoustician for the concept through opening night and beyond. The acoustician must have a passion for how the room will perform— from the perspective of both audiences and performers— and be willing to collaborate on the execution, but never waiver on getting the results that the client wants. A great hall must have great stage acoustics, where musicians can hear each other and play seamlessly together, where the pit orchestra and the performers onstage communicate easily and viscerally. The hall must be both bright, clear and articulate, where instruments and singers can be individually heard at the same time the totality of the sound is palpable... while at the same time the music must have a rich warm resonance that envelops the listener, that can be felt in the feet through the floor. When the audience can be moved to tears by the beauty of the aural experience, then you have a great room.

2) **What were the problems that needed to be solved in the David Koch theatre? Can it ever really be an opera house if it also has to be a ballet theatre?**
Actually there are a number of halls that are used for both opera and Ballet, such as the Seattle Opera and Pacific NW Ballet, the Kennedy Center Opera House and Washington Ballet, Houston Ballet and HGO, to name but a few. The acoustic challenge

that both the Ballet and Opera wanted to address mainly involved the orchestra pit sound. It was inflexible, too small, had poor air circulation, and did not project the very high quality of the performances into the hall. The Opera also wanted more liveness and reverberation, as well as more brightness to the singers' sound. The Ballet wanted to be sure that the sound of the girls dancing in toe shoes would remain as quiet as it was—and it is remarkably quiet.



3) **Has the reinforced sound system been removed? replaced? what do they do when they need a sound system for electronic music, etc.**
The Acoustic Control System previously installed in the theater has been removed and is not needed due to the changes we have made to the hall. There remains in house a system for sounds effects and amplifications when needed.

4) **How was the size and shape of the orchestra pit decided on? The lifts? The reversible black panels?**
The pit was expanded so that the largest Opera ensemble could fit in the room— up to 100 musicians. The pit has 3 lifts actually, a small one upstage so that the understage area could be expanded at a lower level than the main lift if musicians were to be placed under there. The 2nd is the large pit lift holding 80% of the players. There is a narrow downstage lift (Banana shaped) that can expand the pit by 1 seating row for maximum capacity. Seats can be placed on this lift to add seating capacity when a smaller pit is called for (most Ballet use). Reversible panels on upstage wall are either absorptive or sound reflective/diffusive. For example for *Esther*, the absorptive side was placed behind the trumpet and percussion to reduce their sound level and improve balances. The reflective side was used behind the wood winds and strings to help them project. Also a unique perforated floor system was designed to improve ventilation in the pit by drawing ventilation air through tiny holes in the floor at the quietest possible sound level.

5) **How was the room itself treated to enhance acoustic behavior?**

- All carpet was removed, including wall carpet
- All seats were replaced with new seats with material that has optimal acoustic characteristics
- New acoustic side walls were installed near the theater's proscenium
- The orchestra pit was enlarged, thereby increasing the acoustical presence of the orchestra and improving balance and communication between the orchestra and performers
- Quiet heating, ventilation, and air-conditioning systems were also installed

6) **Will audiences hear a difference?**
Most will hear a distinct difference — a brighter and liver sound from the pit and better clarity from the stage.

7) **What are the challenges of working in a landmarked building?**
We are passionate about keeping the visual and architectural integrity of the hall intact and equally passionate about making it sound better. Any improvements suggested were in keeping with the architectural fabric of the hall— for example, the Ballet and Opera did not touch the gold leafed balcony and box fronts, so we focused on the less visual walls behind that recede from view.

8) **What do you think led to the fabulous acoustic results in Alice Tully Hall?**
I think for some programs— such as chamber music, vocal artists, small ensembles playing quiet music— it is very good indeed. Reshaping the stage ceiling and walls profoundly enlivened the brightness and clarity of the hall. The wood walls are more solid leading to a far greater warmth and resonance while the noise of the HVAC and subways is much reduced. A visually stunning room is always an asset to the sound. Having great musicians helps too!

9) **What was the most challenging problem/solution at Juilliard? What were they trying to achieve?**
Juilliard wanted spaces that would be iconic and dynamic, reflecting a new image of the institution. Spaces needed to be very flexible to serve a large range of users (Dance, Music, Technology, Drama), and to be of a very high quality. Acoustics is in every space as part of Juilliard's DNA, not layered on top of or over the architecture, like some afterthought. We believe this creates the best spaces— and the client's responses to the design have been overwhelming.

10) **What is the most successful project you have accomplished to date, and why?**
I put so much of myself into every project, they become something like my children. I am there at the conception, lovingly nurturing and supporting them as they mature, criticizing them gently when needed, and helping them succeed and step out on their own. Each is an individual, with a personality that I helped create, well, the acoustic personality mainly. But because excellent acoustic performance results from the passionate application of acoustic requirements to every surface, material, shape, fabric, and how it is constructed and assembled, my hand is involved in every part of the finished result. So if each project is like raising a child, then how can I possibly pick one as my favorite or most successful?