Q&A with David A. Conant, FASA
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What was the greatest challenge in creating the acoustical system for this concert hall?

I'd have to say it was navigating the curious waters of acoustical design that attempts a fine acoustic across as wide a range of requirements as CSUN required. Design of single-purpose halls such as orchestral concert halls, high performance cinema theaters or drama venues can be challenging enough within architectural and budget constraints, but when one is required to serve each of these needs well (and everything in between) within a single publicly-funded venue, the challenge looms very large. I might say, we were relieved when CSUN determined to find a different location for its concert pipe organ!

What are some of the groundbreaking elements you were able to incorporate?

Perhaps the most unique aspect of the VPAC hall is the screen "grillage" covering its walls. Behind this visual cover lie both carefully shaped reflecting construction and deployable sound absorptive wool serge fabric. Because the architect's vision was to keep the hall's appearance rather unchanged irrespective of the different "sound" required for different performances, the specific challenge required optimizing both the walls' reflectivity and absorptivity with this visual metal mesh cover. Related, was the design of the orchestra shell, which visually, recalls the hall's finish treatments. The shell is rather custom in that sense in addition to the fact that it was designed a bit more like recital screens, providing most of its acoustical reflectivity in its lower portions and permitting some of its built-up sound to "bleed" to backstage.

One often hears the term "flexible" acoustical system, how does it actually work?

The specifics of "flexible" acoustics actually live within a variety of a hall's features. The heard acoustical nuances themselves are influenced variously by which aspects of the hall's acoustical accoutrement are changed from performance to performance. For example, if nothing changed in a hall except for the provision of a reflecting shell to surround an orchestra, the hall's acoustic would be characterized as changed and in that sense, "flexible". That change alone can be substantial and the specifics of that orchestra shell design
greatly influences both how well the orchestra hears itself but also, of course, the patrons' enjoyment. In dedicated music concert or recital halls, what is viewed as an orchestra "shell" is not a portable element but rather fixed, or built into the hall's "sending end". In venues serving multiple functions this element must be removable. At VPAC, in addition to the shell, much attention was paid to achieve suitable reverberation control for cinema premiers and this is where its variable wall sound absorption enters, especially. While other halls that provide sound absorption along lower walls for both overall reverberation control and clarity of audio material from cinema, it is most common that such treatment is fully visible when deployed. With notable exceptions, our larger multipurpose halls requiring variable acoustics provide carefully specified, highly sound absorptive drapery arrayed at the ceiling elevation in order to adjust reverberation time. VPAC incorporates this approach as well as deployable side and rear lower wall absorption with the latter effective especially for cinema, lectures and some pop concerts. Finally, while some venues provide variability in the height and/or tilt angle of a reflective canopy over the musicians, VPAC does not rely on this. Rather, a fixed canopy "eyebrow" floats out beyond the proscenium arch over the audience and is optimized toward providing early sound reflections (assisting clarity) for orchestral and operatic performance. It will have no significant function or influence on predominantly amplified events.

Finally, of some interest, is our engagement of computer modeling of the hall's acoustics. As we increasingly do for halls of this size, we "build" from the architect's drawings a 3D computer model of the hall interior, "place" a virtual musician or orchestra on stage and let the computer identify important acoustical parameters of that specific design. We can also listen to what's termed an auralization of that sound as generated within the computer and make comparative judgements to inform decisions regarding adjustments. By this, we can test various reflective (or absorptive) surface finishes, orientations and the like. Because VPAC required serving an unusually wide spectrum of performance types, this helped confirm our design approach early on.

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