

Laidlaw Music Centre

McPherson Recital Room

World-class acoustic designer, Nicholas Edwards, shares about the design of the hall

Standing alone in one of the most interesting acoustic spaces in St Andrews, I clapped my hands and listened to the sound as it decayed smoothly. The rectangular shape of the space and its totally flat marble walls and floor provided a very exciting room acoustic. With an acoustic this good, why build a new recital room?

One reason is that there was no space for audiences or performers.

In the empty foyer of Younger Hall, the University's graduation hall,

the reverberant acoustic qualities are lost once the audience arrives. The University's new recital room would need an exciting acoustic that worked for performances with an audience of 250.

The artistic aspiration for the McPherson Recital Room in the Laidlaw Music Centre was to build a room that is a joy to perform and listen in; for recitals and for rehearsals by choirs and orchestras. The acoustic design was aimed at clarity and reverberance, which was informed

by following the science—quite different from following convention.

The design approach for the McPherson Recital Room defied convention in that it is not designed to meet a reverberation time. The walls are located to accommodate the room uses and the ceiling height is set low enough to meet the time-delay requirements for overhead reflections while high enough to prevent the room becoming over-loud.

We also departed from an acoustical norm in that the room



does not have reflective “clouds” on the ceiling. We collaborated with the architects to develop a design where ceiling “beams” conceal openings that allow sound into the reverberation chamber above.

The unique reverberation chamber at McPherson allows for an exciting quality of reverberance when the room is occupied by musicians or audience. It allows us to achieve some of the sound quality heard in the empty foyer of Younger Hall, but in a performance space.

The reverberation chamber helps to balance the recital room’s inherent clarity (made stronger by the use of flat walls), introducing the reverberant qualities of a larger

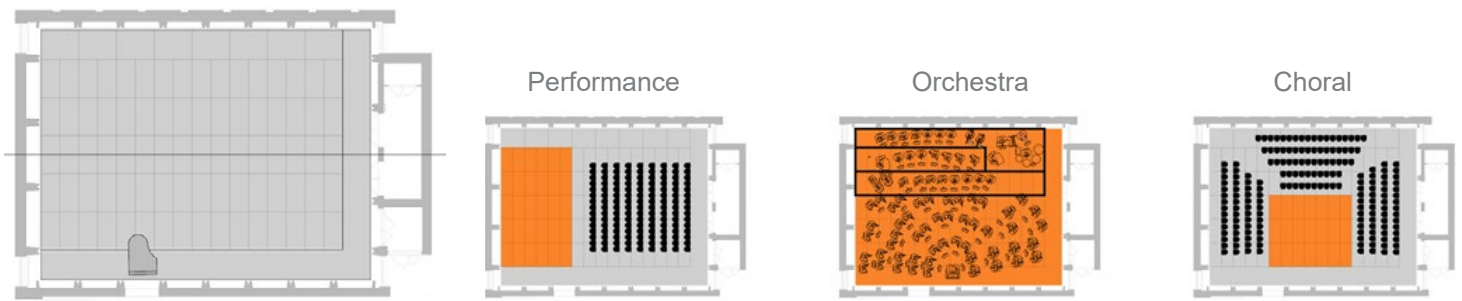
concert hall or even a church. In this recital room, the acoustic of the reverberation chamber is controlled by extending or retracting an acoustical curtain within it, rather than with the reverberation chamber doors used in concert halls.

To dampen the room itself, acoustic roller banners can extend to cover most of the walls of the recital room. These reduce the loudness of the reverberation for orchestra rehearsals or piano performances but have only a small effect on the reverberation time.

The recital room is also a rehearsal room. It supports choruses, the St. Andrews Chamber Orchestra (40-piece Music Centre ensemble),

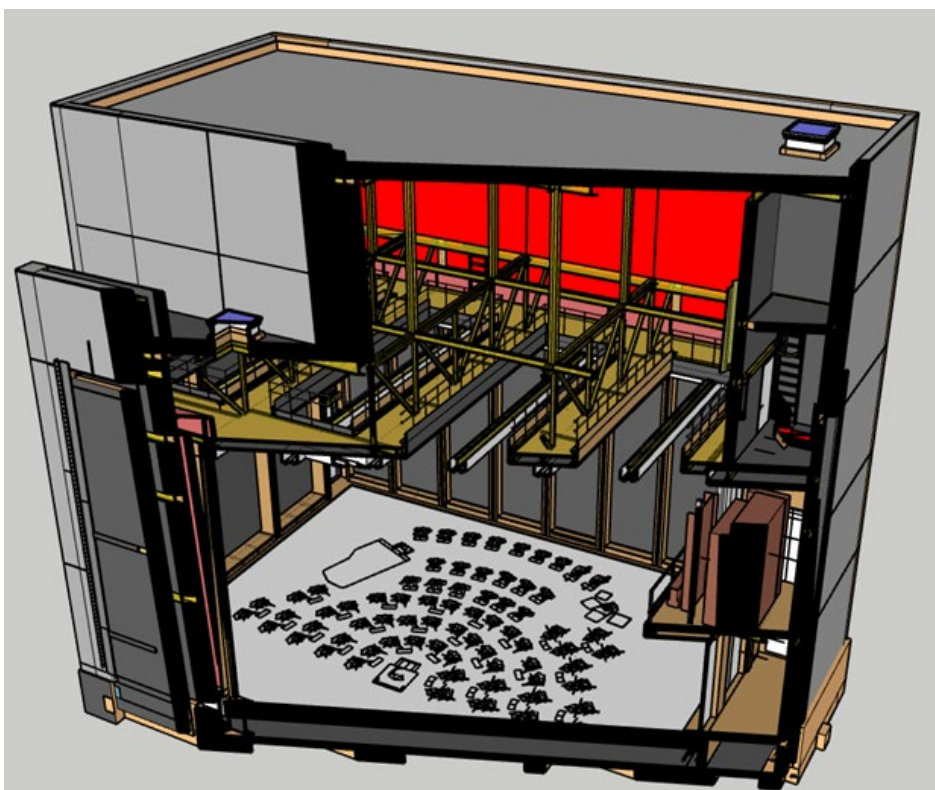
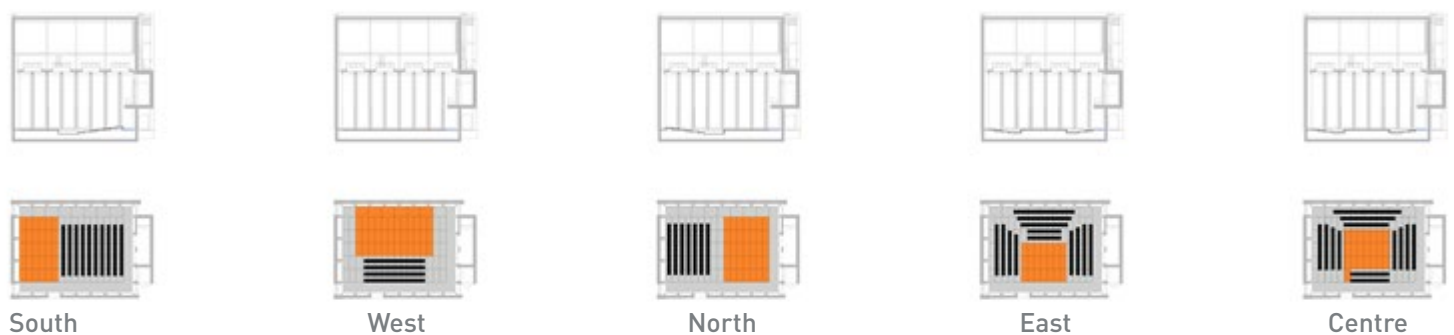
and the St. Andrews Symphony Orchestra (60-70-piece student orchestra).

The staging requirements for such a range of events would normally be met with retractable seating and manual rostra to form the tiers for the orchestra. But the number of technicians needed to manually alter the room setting would be expensive in time and cost; and the storage area needed for the manual rostra would simply not fit on the site. Thanks to funding from the McPherson Trust, all 88 of the 2mx1m rostra are mechanized and allow the room to be changed between settings for audiences to rehearsal at the touch of a button.



Plan showing the 88 motorized rostra Rehearsal and performance settings

Some of the principal settings with audience are these:

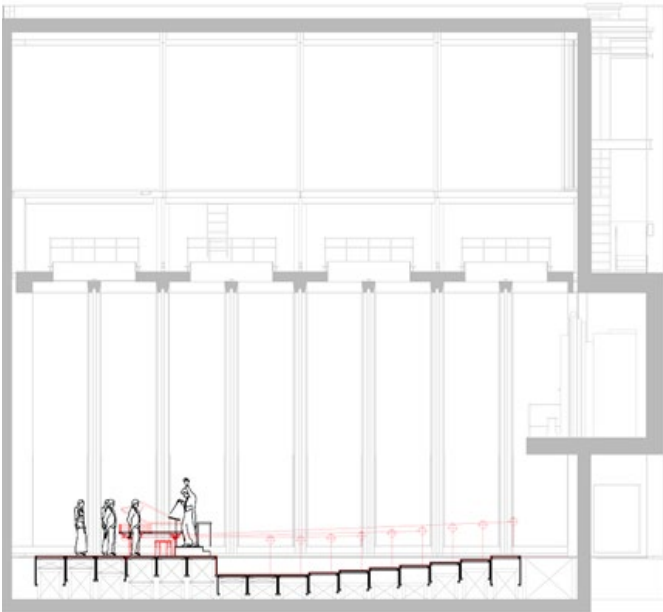


The rostra have a travel as much as 1650mm and are set in a machine pit so that the floor can be lowered as well as raised.

Since none of the level changes is greater than 600mm, no railings are needed. The complex stepping of the rake is programmed into the control system and recalled with a single button-press.

One of the settings achieves optimization of the sightlines with the last row of seats set at platform level with the architectural advantage of all the seating being at or recessed below flat floor level.

A special chair, suitable for both musicians and audiences was developed through a series of prototypes especially for this project.



Section, showing the end-stage setting with iso-visual, incremental sightline stepping



The Concerto Chair, TMA, Italy

During the design process, I attended as many small-scale music events as I could, and some of the most interesting events took place in the upper room above a public house. The intimacy of such a setting is hard to beat. But inevitably in such venues the audience had to choose between suffocation or opening the windows to traffic noise. The new recital room at St. Andrews provides the intimacy of in-the-round performances but in thermal comfort and in a very quiet room. We have

designed the background noise to be close to the threshold of hearing.

The ventilation system does not have any grille noise, because there are no grilles. It does not have any damper noise because there are no balancing dampers. The fan vibration is isolated by locating the AHU on the adjacent building. The fan noise is attenuated by internally lined ducts. The system works by supplying air from the underfloor pit, with air percolating through the 6mm gaps between motorized

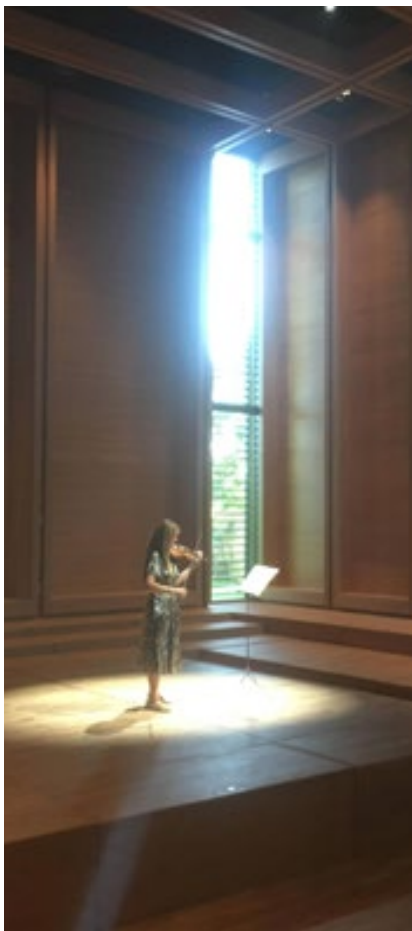
rostra. This provides each audience member with a personal supply of air from below them which is exhausted vertically above them.

Ductwork within the ceiling would have compromised the reverberation chamber so there is none. The air is extracted at high level via a large sound-attenuating plenum outside the reverberation chamber making the ventilation system invisible.

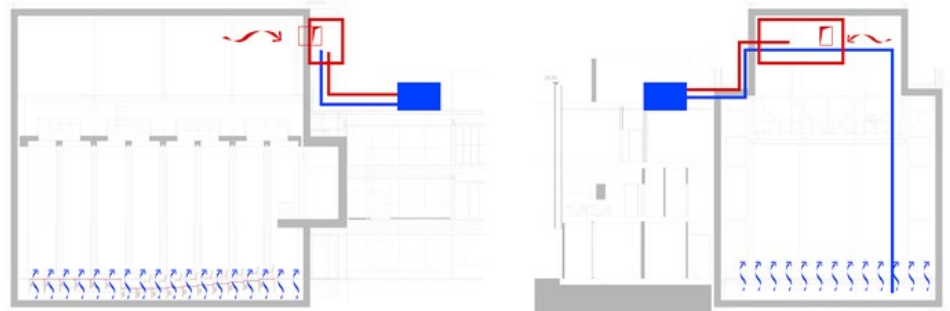
On 12th August 2020, we heard the first music in the recital room:

“The acoustic strategy for the room has given us the geometry of the space, the volume of the space, the way it needs to work for different types of musical repertoire. One of the things that struck me hearing the room for the first time is that it has this beautiful blend of clarity and reverberance, but it is also incredibly warm.”

Jason Flanagan, Flanagan Lawrence Architects



Long section and cross section showing the low-noise ventilation system



Lucy Russell, Honorary Professor of Strings at the University, played violin for a video recording session. From the first moment she stepped in the room she found the acoustic warm and inviting and could not wait to demonstrate the responsiveness.

“This room encourages the musician to be imaginative and will put St Andrews on the world map,” shared Prof. Russell.

The McPherson Recital Room in the Laidlaw Music Centre provides

a world-class setting for recitals and easy transformation for rehearsals by choruses and orchestras.



Nicholas Edwards has provided acoustic and theatrical design for some of the most loved music venues in the world. The science of designing an unforgettable artist experience drives him.