

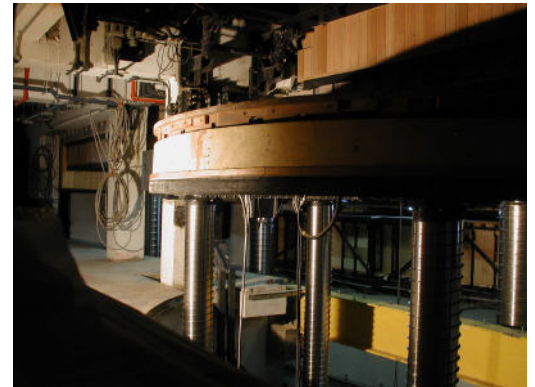
Top right: choir seating units stored in the space behind the platform in The Sage, and below: the piano elevator in the concert hall in Singapore

In Gateshead there is a method of removing the choir seating from the top of the risers which just manages to work in the space; it's a pretty tight fit! The choir seating units are lifted up and stored on simple dedicated chain hoists in the area at the rear of the platform.

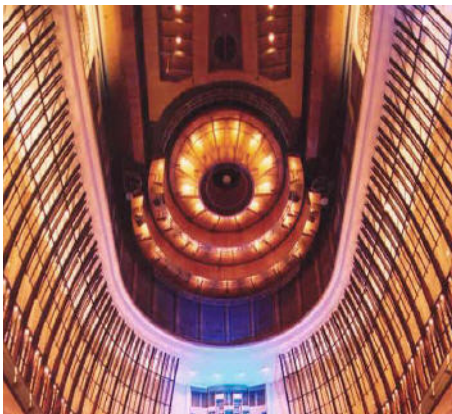
In the space overhead, we have to consider suspensions for lighting, acoustic reflectors and loudspeaker clusters and I group them together here because they really have to be considered as an integrated whole.

The particular requirements of concert and conference halls that need to present a wider range of events are described by reference to the redeveloped Royal Festival Hall in London, the Sage in Gateshead, and the Esplanade in Singapore along with others. Theatre consultants Steve Roberts and Alan Russell together with Jason Flanagan, the architect on the Sage tell the story.

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The worm's eye view of the Esplanade concert hall shows the particular form of the acoustic reflectors that are suspended over the platform. These consist of one circular and two semi-circular elements and there are independently-hoisted lighting trusses between each of these elements. I am a strong advocate of separating the lighting from the reflectors; some years ago we used to build the lighting into the reflectors but that meant that both had to be used at the same level all the time. If they are independent objects, the reflectors can be flown out to high level and then the lighting trusses dropped in to a more useful working height.



Worm's eye view of the acoustic reflectors above the platform in Singapore and, right: a side view of the platform showing the lighting trusses hanging below the reflector

The pictures show that happening; the semi-circular trusses have been lowered below the reflector but there is a circular truss right in the middle that is being kept up at reflector level. These trusses are all custom-built, not only in their curvature but also in their section.

The structure of the top of each reflector has been kept as thin as possible. They are suspended on a number of wire ropes and, as in Gateshead, these reflectors are all counterweighted. In Singapore there are three counterweight shafts behind the organ and these shafts travel right from attic to basement level. Originally we intended to use concrete for the counterweights, this being cheap, but fairly late in the design it was decided to

