

Auditorium Acoustics and Architectural Design

Michael Barron - ISBN 0-419-17710-8

reviewed by John O'Keefe for *Canadian Acoustics/Acoustique Canadienne*

Surely there are few better qualified to chronicle the state of room acoustics research than Michael Barron. He is responsible for several seminal works including the lateral reflections thesis, his widely accepted revised theory of sound in a room and small scale modelling techniques. His long awaited book - it was more than ten years in the making - does not disappoint.

When the book was first published last year, I overheard a consultant opine that it appeared too simplistic. The gentleman apparently missed the point, there are two forms of simplicity: uninformed and profound. Barron's is decidedly the latter. He has successfully confronted a writer's greatest challenge: to present complicated thought in clear concise language. I found many instances where a single sentence, that could be quite easily understood by the layman, held deeper layers for the specialist. Barron once described his sometime associate Harold Marshall as "a good read", he could well apply that moniker to himself.

The book grew from the Acoustic Survey of British Auditoria, organized by Barron in the early 1980s. Subjective surveys, objective measurements and brief building histories are presented for each of the 42 venues. Building types include concert halls, a separate chapter on recital halls, theatres, opera houses and multi-purpose rooms. The book opens with a friendly introduction to the science of acoustics and closes with useful appendices for the specialist.

There are clear descriptions of his revised theory of sound in a room; directional characteristics of speech and operatic singers; Rindel's reflector design equations; and a host of other useful formulae and data. Anders Gade contributes a section on stage design, including updated area allotments for instrumentalists, choristers, etc. There are, unfortunately, a few typographical errors in the text and this section has one of them.

Unlike Beranek's *Music Acoustics and Architecture* - it's hard to avoid the comparison - Barron includes a plethora of useful references. In Beranek's defence though, there is a lot more work to refer to now than there was in 1960. The book is also well referenced within itself, that is from chapter to chapter.

There is plenty of good advice, mixed with occasionally tentative statements and recommendations. These however represent the reality of modern acoustics, not a timid approach by the author. When Barron makes a definitive statement, for example on the use of directional sources to measure theatres, one can be sure that he does so with good reason.

Barron, one of the fathers of the lateral reflections breakthrough, is by no means married to its single minded application. In reviewing the Royal Concert Hall in Nottingham, he points out that the acoustical designers were willing to let the provision of lateral reflections compensate for inappropriate reverberation times. The result in short is a good hall but not a great one. Throughout the book Barron reiterates the importance of a multi-dimensional approach. Acoustics is after all a multi-dimensional experience. Reading his comments on the Nottingham hall, one is struck by the

honest, candid approach. Contrast this to other writers who seem to see vestiges of their own theories smiling behind every corner.

It was also comforting to see a scientist of Barron's stature point out that acoustics remains as much an art as a science. Having worked on both sides of the arts and science schism, I couldn't agree more.

Despite his laudable efforts to make the book clear and simple, an apparent Eurocentric approach may leave some wondering. Most on this side of the ocean are not familiar with "stalls" seating. Japanese research receives little attention, a fact obliquely alluded to in Harold Marshall's three page Forward to the book.

The reproduction quality of some of the figures is less than perfect. This applies mostly to extracts from others researchers' work. The plans and sections are very well done and the decision to reproduce them at a consistent scale (1:500) is a good one. They represent the most lasting resource in a book of this kind and the extra effort put into them shows.

Acoustics at this end of the century is an exciting field and Barron does indeed render an exciting book - "a good read". It is at times hard to put down. It will remain a valuable reference for years to come. Anyone with any interest in room acoustics be it specialist or generalist should have *Auditorium Acoustics and Architectural Design* on the shelf ready to pick up easily and often.

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