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Acoustics Before & After Science: The Case of the Concert Hall

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Concert halls are designed for attentively listening to music. To guarantee that the listening experience mediated by these buildings is acoustically correct, architects rely upon mathematical formulas to measure and predict how a building will sound. Armed with these formulas, they are able to experiment with unconventional concert hall designs without compromising acoustics.

The achievements of modern architectural acoustics are a valorization of the mathematical formulas used to predict acoustics. Indeed, the development of a predictive theory of architectural acoustics by Wallace Sabine in 1900 has been celebrated as the beginning of a new era of understanding sound and acoustic design. But overlooked in this scientific triumphalism are the aesthetic standards that shape the acoustic design of buildings for music. Sabine's formula transformed our understanding of how music behaves in an enclosed space, but it did not change our understanding of how music should sound in these spaces. This question, how music should sound in enclosed spaces, can be understood through musical culture.

Examining the history of Amsterdam's Concertgebouw (opened in 1888) demonstrates how, in lieu of an acoustic formula, musical culture, especially ideas about listening, influenced ideas about acoustics and acoustic design. Exploring the designs for the Concertgebouw proposed by architects, patrons, and musicians reveals that prior to quantification, acoustics were more closely aligned with musical and aural discourses.

Using the case of the Concertgebouw as a starting point, I argue that *acoustic standards* are aesthetic and dependent upon musical culture while *acoustic measurement* is dependent upon a mathematical formula. The history of concert hall acoustics is a history where the former (acoustic standards) are quantified by the latter. This quantification of sound leads to the acoustic standards of a distinct musical culture becoming architecturally durable, opening up interesting questions concerning the relationship between materiality and musical culture.

Biography

Darryl Cressman received his PhD from the School of Communication at Simon Fraser University in Vancouver. His dissertation, entitled "The Concert Hall as a Medium of Musical Culture: The Technical Mediation of Listening in the 19th Century," is an examination of how the ideal of attentive listening shaped the design and meaning of Amsterdam's Concertgebouw.

Darryl's research is oriented towards technology and musical culture and the ways in which ideas about listening have been materialized through different objects and technologies. He is also interested in exploring the relationship between technology and musical culture from a variety of theoretical perspectives. He has published articles and book chapters on media theory and the philosophy of technology.