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**Re-tuning the mind's ear: An anonymous history of acoustic  
prosthetic technologies for the ear**

A thesis presented in partial fulfilment of the requirements for the degree of  
Doctor of Philosophy in Communication at Massey University, Palmerston North,  
New Zealand.

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## **Dedication**

This thesis is dedicated to my beloved father, Brian Herlihy (1926 – 2011), and my dear friend and teacher, Dr Scott Thomas Eastham (1949 – 2013).

Two extraordinary men who made this endeavour possible.

With love and light.

## Acknowledgements

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## Abstract

Over the last century the use of wearable personal acoustic technologies for the ear in a variety of different guises has become commonplace in daily life. These devices, such as hearing aids and headphones, have the propensity to reshape auditory experience and in turn, the perception of acoustic space by enabling personalised and immersive encounters with sound that alter the user's understanding of, and relationship to, their surrounding environment.

The aim of this study is to explore how acoustic prosthetic devices modify how sound is experienced, and how ensuing changes in auditory acuity affect the user's perception of acoustic space. To achieve these aims this study compiled an anonymous history of acoustic space through the lens of various acoustic prosthetic technologies for the ear. It presents an historical analysis of the development and application of these personal devices in key areas of innovation and application, in particular hearing aids, the stethoscope, and headphones. In this thesis, a hybrid methodological approach is offered to expand Siegfried Giedion's contribution to anonymous history by integrating analysis of a post-phenomenology of embodiment. This methodology illustrates the ways in which the technological evolution of these devices across history significantly influenced the user's experience of mediated sound and, in turn, acoustic space.

This research provides further insight into, first, the ways in which hearing aids, devices used to ameliorate a deficit in hearing, historically contributed to a reshaping of the user's perception of acoustic space. Second, this thesis examines how the development and application of the stethoscope marked the beginning of a movement towards the increasing privatisation of mediated listening experiences. Finally, the influence towards private mediated experiences of sound that began to build momentum in the late nineteenth century is explored to foreground the increasingly widespread use of prosthetic technologies for the ear, in particular headphones, also examined in this thesis.

In so doing, this study draws attention to new complexities in the experience of auditory encounters facilitated by acoustic prosthetics. The thesis further reveals the paradoxical nature of these devices as their form and function has continued to evolve over time. Additionally, through the integration of digital technology, this study also explores how acoustic prosthetic wearers are able to facilitate, and control, new hybridised and customised experiences of sound and acoustic space. It is argued that the new and increasing ability to experience what is not possible through the unmediated ear raises new challenges to the ways in which acoustic space has previously been considered. Heterogeneous experiences of acoustic space made possible through rapidly advancing developments in prosthetic technologies for the ear require greater consideration, in particular the potential effect(s) that these experiences of acoustic space have upon the re-tuning of the mind's ear.

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