



# THE INSTITUTE OF SOUND AND VIBRATION RESEARCH AT THE UNIVERSITY OF SOUTHAMPTON

Stephen Elliott<sup>1\*</sup>

<sup>1</sup> Institute of Sound and Vibration Research, University of Southampton, UK

## ABSTRACT

The Institute of Sound and Vibration Research, ISVR, grew out of the Aeronautics Department at the University of Southampton in 1963. Although its focus was initially on noise and on vibration-induced structural fatigue in aircraft, there was already a recognition of the wider issues of sound in society and its medical effects. The ISVR was set up as a separate research institute due to the far-sightedness and determination of its founder, Prof Elfyn Richards, who had previously been Chief Aerodynamicist and Assistant Chief Designer at the Vickers Armstrong aircraft company. The engineering research interests of the Institute continued to develop as it rapidly expanded in the 20<sup>th</sup> century, to include aeroacoustics, bubble acoustics, audio, active control and railway noise and vibration. Whereas originally only about 20% of the ISVR academic staff were concerned with medical issues and human response, this figure has grown to be more like 60%, including audiology, cochlear implants and human response to sound and vibration, reflecting the growing importance of these aspects of sound and vibration.

**Keywords:** *research institute, sound, vibration*

## 1. HISTORY OF THE ISVR AND ITS BACKGROUND

Engineering departments at many universities in the UK were rapidly expanding in the 1960s, driven by the need for skilled people across many industries. In particular, the Aeronautics Department at Southampton had a vibrant research group on aircraft noise and vibration, which

became a separate research institute, the ISVR [1], in 1963, with five academic staff. The first Director was Prof Elfyn Richards, who had previously been Chief Aerodynamicist and Assistant Chief Designer at the Vickers Armstrong aircraft company, and after his time in Southampton would go on to be Vice-Chancellor of Loughborough University. In these early days, the ISVR began an MSc in Sound and Vibration Studies, and also Phil Doak became the founding editor of the Journal of Sound and Vibration.

Leading up to the 1960s there was a thriving and entrepreneurial aircraft industry in the UK, with many different companies competing in both the military and civilian aircraft markets [2]. The need to reduce aircraft noise levels from aircraft was clear [3], as was the need to understand vibration-induced structural fatigue, which had led to several catastrophic failures in the first commercial jet aircraft, the de Havilland DH.106 Comet [4]. There was also a wider concern about noise in UK society that led to the UK Noise Advisory Committee, the Noise Abatement Act in 1960 [5] and the comprehensive and highly influential report of the Committee on the Problem of Noise in 1963 (the ‘Wilson Report’) [6].

## 2. DEVELOPMENT OF THE ISVR

The ISVR expanded rapidly in the remainder of the 20<sup>th</sup> century. Its overall income increased exponentially, doubling about every six years, with about two-thirds of this coming from external research grants. There was also a corresponding increase in the numbers of academic and support staff and PhD students, and a widening of the research interests within the ISVR to include automotive noise and vibration, structural dynamics, underwater acoustics, hearing protection and communication, signal processing, human factors and active control. The Wolfson Unit for Noise and Vibration Control was founded in 1968 to provide more focused support for industry, and this, together with the Automotive Design Advisory Unit, was later renamed ISVR Consulting [7]. March 1968 also saw

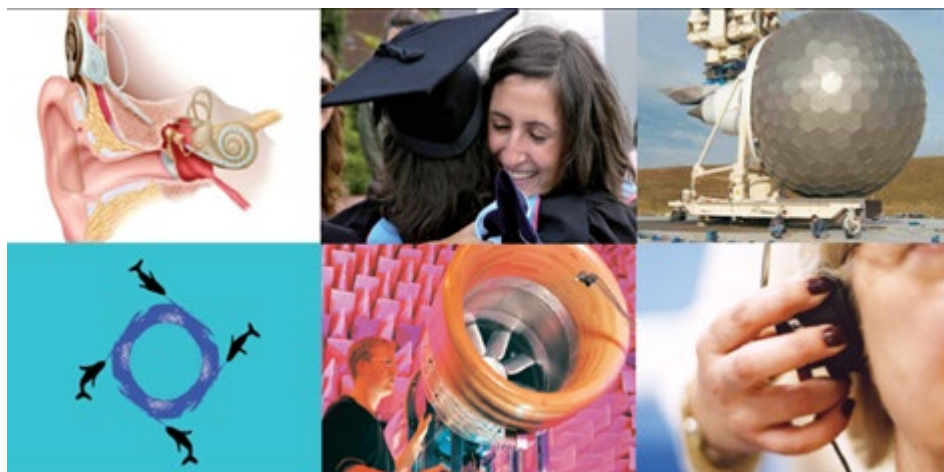
\*Corresponding author: [sje@isvr.soton.ac.uk](mailto:sje@isvr.soton.ac.uk)

**Copyright:** ©2023 Stephen Elliott. This is an open-access article distributed under the terms of the Creative Commons Attribution 3.0 Unported License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



the opening of the Large Anechoic Chamber [8] and the two Reverberation Chambers [9] in the ISVR's Rayleigh Labs. There was also an increasing interest in the human aspects of sound and vibration, in particular biodynamics, audiology, and cochlear implantation, which led to the

formation of the South of England Cochlear Implant Centre, later the University of Southampton Auditory Implant Service (USAIS), in 1990 [10], who have now been involved in over 2,000 cochlear implantations.



**Figure 1** . Pictures relating to the ISVR, left to right top to bottom: Cochlear implant, graduation, noise test on an aircraft engine, whale noise visualisation, fan noise measurement and audiology assessment

Whereas only about 20% of staff at the ISVR were involved in hearing and biomechanics in 1970, the figure now is about 60%. The ISVR was awarded the Queen's Anniversary Prize in 2005 with the citation for: "Improving the quality of life for the profoundly deaf and reducing noise pollution

## 1. ACKNOWLEDGMENTS

I would like to thank all of the people that I spoke to in the preparation of this article, particularly Maureen Mew and Mike Lower, who gathered a great deal of interesting information together for the 50<sup>th</sup> anniversary of the ISVR in 2013.

## REFERENCES

- [1] <https://www.southampton.ac.uk/research/institutes-centres/institute-of-sound-vibration-research>
- [2] [https://en.wikipedia.org/wiki/Aerospace\\_industry\\_in\\_the\\_United\\_Kingdom#1939\\_to\\_1945](https://en.wikipedia.org/wiki/Aerospace_industry_in_the_United_Kingdom#1939_to_1945)
- [3] R.H. Thomas, M.E. Choudhari & R.D. Joslin. (2002). NASA TM-211631 Flow and Noise Control: Review and Assessment of Future Directions.
- [4] [https://en.wikipedia.org/wiki/De\\_Havilland\\_Comet](https://en.wikipedia.org/wiki/De_Havilland_Comet)
- [5] <https://www.legislation.gov.uk/ukpga/1960/68/c/ontents/enacted>
- [6] Sir Alan Wilson, (1963), Noise — Final report of the committee on the problem of noise, Cmnd 2056, HMSO, London
- [7] <https://isvr.co.uk/history/>
- [8] <https://www.southampton.ac.uk/research/facilities/large-anechoic-chamber>
- [9] <https://www.southampton.ac.uk/research/facilities/reverberation-chambers>
- [10] <https://ais.southampton.ac.uk/about-ais/>