

Tutorial 4 - The Acoustics of the Singing Voice

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Abstract

Singing is a way humans have expressed themselves from earliest times, and the range of sounds that they can achieve from what is basically a variable-pitch buzzer and a flexible short tube is immense. This workshop will explore the physiology of the human singing voice and relate its elements to the nature of the acoustic output and how it can be varied. Shape changes that are made to the flexible tube or 'vocal tract' will be explored based on magnetic resonance images (MRI) from which the airway itself can be reconstructed. This enables the shape changes to be investigated in terms of the physiology as well as the acoustics by means of digital waveguide synthesis. Reference will be made to choral singing; in particular tuning in unaccompanied or 'a cappella' singing.

Bio

David Howard is Head of the Department of Electronics and Head of the Audio Laboratory at the University of York. His research centres around the analysis and synthesis of singing, speech and music and the use of real-time visual displays in vocal pedagogy. David has been an [Engineering and Physical Sciences Research Council](#) Senior Media Fellow and he has been involved in a number of radio and TV programmes mainly about the science of sound, particularly singing and music. In the BBC4-TV programme 'Voice' he worked with Jeremy Hardy on his singing(!) and Rory Bremner on his impression of Tony Blair. Recently he was involved in Channel 4's 'Hidden Talent Show'.

David conducts the 'Vale of York Voice'; a local choir that sings evensong in York Minster about once a month.