The Cambridge Handbook of Phonetics

Phonetics – the study and classification of speech sounds – is a major sub-discipline of linguistics. Bringing together a team of internationally renowned phoneticians, this handbook provides comprehensive coverage of the most recent, cutting-edge work in the field, and focuses on the most widely debated contemporary issues. Chapters are divided into five thematic areas: segmental production, prosodic production, measuring speech, audition and perception, and applications of phonetics. Each chapter presents a historical overview of the area, along with critical issues, current research and advice on the best practice for teaching phonetics to a range of students. It brings together global perspectives, and includes examples from a wide range of languages, allowing readers to extend their knowledge beyond English. By providing both state-of-the-art research information, and an appreciation of how it can be shared with students, this handbook is essential both for academic phoneticians, and anyone with an interest in this exciting, rapidly developing field.

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Genuinely broad in scope, each handbook in this series provides a complete state-of-the-field overview of a major sub-discipline within language study and research. Grouped into broad thematic areas, the chapters in each volume encompass the most important issues and topics within each subject, offering a coherent picture of the latest theories and findings. Together, the volumes will build into an integrated overview of the discipline in its entirety.

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The Cambridge Handbook of Phonetics

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**Robert Kennedy** is a Senior Lecturer in Linguistics at the University of California, Santa Barbara, USA. His research has focused on the typology and analysis of segmental and rhythmic alternations in reduplicative phonology, with an emphasis on interactions among stress patterns, morphological structure and allomorphic phenomena, as well as sociophonological variation within and across the vowel systems of varieties of English, especially with respect to formant dimensions and contrasts in varieties of California English. His work has appeared in *Linguistic Inquiry*, *Phonology* and *American Speech*. He is also the author of *Phonology: A Coursebook* (Cambridge University Press, 2016), an introductory textbook for students of phonology.

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Young Shin Kim runs a language lab in her native hometown of Cheongju, Republic of Korea and is Secretary of International Society of English Phonetics. She holds a PhD from University College London; her thesis investigated the aerodynamic and acoustic characteristics of denasalised nasal consonants and how they are perceived by different L1 users. She taught phonetics at the same university for two years after her doctoral study. Upon returning to Korea, she has taught phonetics at Seoul National University and Chungnam National University. Her recent interest in research focuses on the teaching and learning of English intonation.

Albert Lee is an Assistant Professor at the Department of Linguistics and Modern Language Studies, the Education University of Hong Kong. His research interests lie in the phonetics of speech prosody, specifically of Japanese and Cantonese. He uses both acoustic analysis and analysis-by-synthesis in his work on speech production. Currently, his research focuses on L2 phonological acquisition, looking at how prosodic features such as quantity are acquired by learners from different L1 backgrounds.

Chin-Hui Lee is a Professor at the School of ECE, Georgia Institute of Technology, USA. Before 2001, he was in Bell Laboratories as a Distinguished Member of Technical Staff and Director of the Dialogue Systems Research Department. A Fellow of the IEEE and of ISCA, Lee has published over 500 papers and 30 patents. His h-index is 80. He was the recipient of the Bell Labs President Gold Award in 1998 and the SPS 2006 Technical Achievement Award for Exceptional Contributions to the Field of Automatic Speech Recognition. In 2012, he was awarded the ISCA Medal in scientific achievement for pioneering and seminal contributions to the principles and practice of automatic speech and speaker recognition.

Susan Lin is an Assistant Professor of Linguistics at the University of California, Berkeley, USA. Her research in phonetics focuses on speech production and articulation. She uses articulatory methods, primarily ultrasound and aerodynamics, to study speech, especially the production of complex speech sounds, the acquisition and development of speech articulation, and the phonetics of endangered and under-described languages.

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Kirsty McDougall is a Lecturer in Phonetics at the University of Cambridge, UK, and a Fellow of Selwyn College, Cambridge. Her research interests range across speaker characteristics, forensic phonetics, theories of speech production, and the phonetic realisation of varieties of English. Among other things, her forensic phonetic research has focused on speaker-characterising properties of dynamic features of speech, perceived voice similarity and its implications for voice parade construction, and the development of techniques for analysing individual differences in disfluency behaviour. She was a member of the ‘DyViS’ project team at the University of Cambridge, whose forensically oriented speech database has led to significant developments in the number and breadth of forensic phonetic studies carried out in recent years.

Geoffrey Meltzner is the Vice-President of Research and Technology at VocaliD. Geoff has focused his research efforts towards non-traditional speech technologies, including alaryngeal speech enhancement, silent speech recognition and stand-off speech recognition. He now leads VocaliD’s research efforts towards providing personalised voices to individuals living with speechlessness and unique vocal persona to all things that talk.

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Peggy Mok received her PhD in Linguistics from the University of Cambridge, UK. She is an Associate Professor in the Department of Linguistics and Modern Languages at the Chinese University of Hong Kong. She studies both speech production and perception, particularly with cross-linguistic and psycholinguistic perspectives. Speech acquisition in various contexts and tone research are important themes in her work.

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Richard Ogden is Professor of Linguistics at the University of York. His research focuses on the phonetic details of naturally occurring conversation, including turn-taking, and the phonetic implementation of social actions, combining conversation analytic and phonetic methods. He also has an interest in multimodality. He is on the editorial board of Phonetica and Interactional Linguistics and is the author of the textbook An Introduction to English Phonetics (Edinburgh University Press, 2017).

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Michael Proctor is a Senior Lecturer in the Department of Linguistics and a member of the Centre for Language Sciences at Macquarie University, Australia. His research focuses on speech production and perception, and phonetic characterisation of phonological behaviour, with a particular focus on fricatives and liquid consonants. He uses electromagnetic articulography, ultrasound, eye-tracking and MEG to investigate articulation, language development and speech processing in adults, children, second language learners and disordered populations. With colleagues in the Speech Production and Articulation Knowledge group at the University of Southern California, he is developing new methods of real-time magnetic resonance imaging to examine the dynamics of speech production, to inform our knowledge of phonological structure and its cognitive representation.

Eva Reinisch is head of the Phonetics group at the Acoustics Research Institute of the Austrian Academy of Sciences. Her research covers a variety of issues in spoken language processing. Among others, these concern signal-driven context effects on spoken word recognition, organisation of the mental lexicon, use of acoustic cues in native and non-native language processing, and the influence of foreign accent and dialect in spoken word recognition. She uses online and offline psycholinguistic methods including eye-tracking, the method whose application and merits she discusses in Chapter 18 of the current volume.

Yvan Rose is a Professor and researcher in linguistics (phonetics and phonology) who specialises in language acquisition and speech disorders at Memorial University of Newfoundland, Canada. He obtained his PhD from McGill University in 2001 and pursued additional training as post-doctoral fellow at the University of California, Berkeley as well as Brown University, USA. His research focuses on the integration of perceptual, acoustic and articulatory factors within theoretical models of phonology and phonological development. He has also contributed to the expansion of research methods in these areas through the development of Phon, an open-source software program for the study of phonology and acoustic phonetics, and the creation of the PhonBank, a web-accessible database documenting language acquisition and speech disorders across a wide range of languages and language learning contexts.

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Markus Toman is a Head of Research & Development at VocaliD. Previously working on statistical parametric speech synthesis for the visually impaired and for transformation of language varieties, he now focuses on deep learning techniques to achieve flexible and personalised speech synthesis. His interests also include performance optimisation to bring text-to-speech systems to low-end and mobile devices and detection of artificial speech.

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