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COMMUNICATIVE FUNCTIONS AND LINGUISTIC FORMS IN SPEECH INTERACTION

Prosody is generally studied at a separate linguistic level from syntax and semantics. It analyses phonetic properties of utterances such as pitch and prominence, and orders them into phonological categories such as pitch accent, boundary tone and metrical grid. The goal is to define distinctive formal differentiators of meanings in utterances. But what these meanings are is either excluded or a secondary concern. This book takes the opposite approach, asking what are the basic categories of meaning that speakers want to transmit to listeners? And what formal means do they use to achieve it? It places linguistic form in functions of speech communication, and takes into account all the formal exponents – sounds, words, syntax, prosodies – for specific functional coding. Basic communicative functions such as 'questioning' may be universally assumed, but their coding by linguistic bundles varies between languages. A comparison of function-form systems in English, German and Mandarin Chinese shows this formal diversity for universal functions.

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I wish to dedicate this book to my grandson Alexander, who, around the age of 15 months, started using the syllable sequence [ʔaʔa] with down-stepping pitch, accompanied by index-finger pointing, to direct his mummy's attention to something he spotted in his action field: an example of a pointing call on an elementary articulation carrier without words, which shows up the fundamental role of communicative functions besides phonemes, words and sentences in language acquisition and use.

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Preface

Sixty Years in Phonetics and Prosody

In 1948, Edinburgh University started a Linguistic Survey of Scottish Dialects. It was anchored in the Faculty of Arts in two ways, by creating a Chair in English Language and General Linguistics, which was filled by Angus McIntosh, and by setting up a Department of Phonetics, headed by David Abercrombie, a member of the London School of Phonetics. In the Phonetics Department at UCL, teaching and research focused on the sounds and prosodies of individual languages in a language-learning scenario, aiming at perfection in producing and recognising the spoken medium. This 'mouth and ear' approach to the sound of an individual language, immensely useful for acquiring proficiency in oral-aural communication, was not a sufficient basis for the analysis of sound systems in a survey of dialects. It had to be put on a general phonetic level of categorising the sound of human language. To this end, Abercrombie instituted an intensive one-year Ordinary Course of Phonetics, followed by a one-year postgraduate Diploma Course, and established a research environment in General Phonetics. Besides training linguists in the techniques of fieldwork and auditory-descriptive analysis, it included research into speech acoustics with the help of Walter Lawrence's speech synthesiser, the Parametric Artificial Talker (PAT), and into speech physiology in Peter Ladefoged's investigation of air-flow control for syllable and stress production, in cooperation with the Department of Physiology.

Having followed the thorough teaching in English language by the Anglicist Hermann Martin Flasdieck at Heidelberg University, who might be called the last Neo-Grammarian, and having been fascinated by his introduction of General Phonetics into the explanation of historical sound change, it was only natural for me to select Edinburgh for a year's stay in an English-speaking country as part of my degree course at home. I attended the Ordinary Course in Phonetics in the academic year 1957–8, and, after graduating from Heidelberg University, continued with the Diploma Course in 1960–1. Those were

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formative years. Courses of ear training and performance of the sound repertoire of *homo loquens*, integrated with lectures on phonetic theory, laid the foundation for the analytical assessment and description of spoken language. These classes provided the core skills for any further phonetic analysis. They were flanked by classes introducing experimental analysis, on the one hand, and phonological categorisation, on the other. Thus, Elizabeth Uldall gave an introduction to doing perceptual experiments with the Semantic Differential Technique, using English intonation patterns that were systematically varied with PAT, and Michael Halliday presented his system of English intonation within his systemic grammar.

David Abercrombie's scientific thinking was strongly influenced by Ogden, Richards, Malinowski and 'The Meaning of Meaning', as well as by Ogden's translation of Vaihinger's *Philosopy of 'As If'* (see Vaihinger 1920), and, last but not least, by J. R. Firth's *Prosodic Analysis* and *Modes of Meaning*, and his famous phrase 'Surely, it is part of the meaning of an American to sound like one.' He saw General Phonetics as a unitary science of converging levels of analysis to describe and explain the transmission of meaning in human interaction. Nowhere were there dichotomies of the subjects evoked, such as phonetics versus phonology, nor questions asked of the type 'IS this phenomenon phonetic or phonemic?' I took this conception of the subject with me when I left the Edinburgh Phonetics Department in 1966, after another five years on the teaching staff, to take up a research position at the Institute of Phonetics and Communication Research (later Communication Research and Phonetics) at the University of Bonn.

On the surface, this was quite a different world, where phonetic research had been shaped by the psychologist Paul Menzerath, the physicist Werner Meyer-Eppler and finally by the communications engineer Gerold Ungeheuer. But I learned acoustics and grasped its algorithms for speech analysis, and I expanded the interdisciplinary horizon of scientific pursuits contributing to the questions raised in General Phonetics. The anchoring of General Phonetics in Communication Research created the same kind of intellectual environment as David Abercrombie's Edinburgh Department: the physical aspects of speech analysis are subsumed under the functions of speech communication, and the measurement of carrier signals must be related to the meanings carried. In this interdisciplinary set-up I was introduced to Karl Bühler's *Sprachtheorie* and his *Organon Model* and to Eberhard Zwirner's *Grundfragen der Phonometrie* (1936), where the schism between phonetics and phonology as subjects in the sciences and the humanities, respectively, was overcome by relating

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measurement statistically to language categories determined by meaning and communicative function.

When, in 1971, I accepted the offer of the chair in a newly founded Institute of Phonetics at Kiel University my aim was to make my interdisciplinary training, gained in Edinburgh and Bonn, the basis for building up a research platform of speech communication in a modern laboratory, combined with a fully fledged, four-year MA degree course in General Phonetics. To reach this goal I was able to rely on a competent and dedicated staff. The engineer Werner Thon was in charge of the lab with its two technicians, Heinz Janßen and Herbert Fuchs. He saw to obtaining the necessary analysis hardware in many speech production and perception projects, and also moved the Institute through the various stages of the computer age. The physicist Kurt Schäfer-Vincent looked after the computer analysis software and developed an analysis package that contained a powerful F0 analyser (Schäfer-Vincent 1982, 1983). This work was then continued by the physicist Michel Scheffers, the physics graduate Tobias Rettstadt and the phonetics graduate Matthias Pätzold from the Bonn Institute. The result was a labelling and analysing tool, which became the basis for setting up the database of the *Kiel Corpus of Read and Spontaneous Speech.*

This General Phonetics laboratory provided the environment for a broad range of investigations into segmentals and prosodies in speech production and perception in a variety of languages, within the theoretical frame of speech communication that I had imported. Research centred on two main topics: (1) articulatory reduction and its perception in connected speech and spontaneous interaction, focusing on German, but including other languages, and looking for universal regularities in human speech with reference to historical sound change, and (2) the development of KIM, the Kiel Intonation Model, for German. Here I was again fortunate to work with a congenial team who stayed for many years doing research for their PhDs or for their 'Habilitation' doctorates, first and foremost Bill Barry, who later got the Chair of Phonetics at Saarbrücken University, and then Andy Butcher, Hermann Künzel, Wim van Dommelen and Adrian Simpson, who moved to chairs in phonetics at universities in Adelaide, Marburg, Trondheim and Jena, respectively.

Beyond the thriving Kiel-based activities in General Phonetics, there was close cooperation with Björn Granström and Rolf Carlson at KTH in Stockholm in connection with the development of the German module in the multilingual Infovox TTS system. By introducing sets of reduction and intonation rules on the basis of the Kiel research results, the synthetic output of continuous read speech was greatly improved, and at the same time this TTS modelling provided a powerful test in the development of KIM. The Kiel Institute also

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had continual exchanges on phonetic issues, especially in its two core research areas, with colleagues in speech science institutes around the world, with Eli Fischer-Jørgensen, Jørgen Rischel and Nina Grønnum at Copenhagen, Björn Lindblom at Stockholm/Austin, Eva Gårding, Gösta Bruce and David House at Lund, Sarah Hawkins and Francis Nolan at Cambridge, Antonie Cohen and Sieb Nooteboom at IPO/Utrecht, Louis Pols at Amsterdam, Vincen van Heuven at Leiden, René Carré, Shinji Maeda and Jacqueline Vaissière in Paris, Albert di Cristo, Daniel Hirst, Alain Marchal and Mario Rossi at Aix-en-Provence, Pier Marco Bertinetto at Pisa, Daniel Recasens at Barcelona, Arthur Abramson, Leigh Lisker and Michael Studdert Kennedy at Haskins, Ken Stevens and Joe Perkell at MIT, John Ohala at Berkeley, Randy Diehl at Austin, Osamu Fujimura at AT&T Murray Hill, Hiroya Fujisaki at Tokyo/ATR Kyoto, Eric Zee at Hong Kong, Yi Xu at Haskins/UCL and Wentao Gu at Nanjing.

After my retirement in 2000, the scientific climate at the Kiel Institute changed completely. Measurement moved centre-stage with a vengeance, relegating communicative function to a *post hoc* adjunct. Worldwide, phonetics has been transformed from a holistic approach in speech communication to a diversification of labs attached to a great variety of superordinate academic subjects, getting ever so much closer to the intellectual framework Peter Ladefoged depicted for the International Phonetic Association in the *Journal of Phonetics* (1990, p. 338f): '[It behaves] somewhat like the Church of England – a body whose doctrine is so diffuse that one can hold almost any kind of religious belief and still claim to be a member of it.' Such an *ex cathedra* definition of a scientific discipline and of a professional body of practitioners undermines its recognition by the wider scientific community and by the general public, and may become fatal: the three Institutes of General Phonetics I have been attached to in my academic career, Edinburgh, Bonn and Kiel, have been closed. If a torso continues, primarily for teaching in linguistics courses, as in Edinburgh and Kiel, it is neatly divided into phonetics and phonology.

Nowhere is this deplorable development in our *universitas* more detrimental to gaining insight into speech communication than in the field of prosody. This monograph is to show the speech community what a unitary approach in General Phonetics can achieve. It summarises sixty years of thinking about speech, with contributions from a large number of teachers, colleagues, staff and students, to whom I am most grateful for having guided or accompanied me on this journey.

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