Puzzles and patterns in 50 years of research on speech perception. Sarah Hawkins, Dept. of Linguistics, University of Cambridge, Cambridge, UK. [Full Paper Available on CD]

The introduction of speech synthesizers and modern acoustic analysis in the mid-20th century allowed speech perception research to flourish, encouraging a period of broadly-based empirical work. Experiments examined diverse influences from information processing (intelligibility, statistical decision-making), biology/psychology (audition, memory, learning, hemispheric dominance), and linguistic-phonetics (local and non-local context, prosody, individual and stylistic variation). From this wealth of data, one dominant theme emerged: the puzzle that we feel we hear stable, or invariant, percepts of words and phonemes despite their enormous articulatory-acoustic variability in different contexts. Theories were developed to elegantly account for the transformation between variable signal and invariant perceptual unit. But what units, and what is elegant? The search focused on motoric or acoustic correlates of abstract phonological/phonetic units, which represent only information required to differentiate citation-form words. This emphasis on 'early abstraction', while elegant for phonology, cannot explain how natural speech is understood, yet shaped phonetic and psycholinguistic enquiry, as exemplified by the 'top-down vs. bottom-up' debates. In this period, new data accumulated on old topics (e.g. memory, speaker identity, multi-sensory, neuroscience, phonetic indicators of grammar, meaning and discourse function) and new ones (e.g. developmental and comparative perception, cross-linguistic studies), but were sidelined as too puzzling when they did not fit existing theory. However, since the 1990s data seem again to be forcing theoretical change, with significant shifts in the relative importance of older themes blurring distinctions between perceived signal and knowledge, de-emphasizing phonology, and re-emphasizing context. Thus the cyclic pattern between data puzzles and theory repeats. [Supported in part by the Leverhulme Trust.]