

Motor Speech Conference

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Keynote Address

The continuity of planning and execution processes in spoken language production:
Evidence from Neurophonetics.

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Neurogenic impairments of speech sound production are generally classified into *phonological paraphasia*, *apraxia of speech*, and *dysarthria*. This clinical classification corresponds with tri-partite models of speech production distinguishing between a phonological encoding stage, a phonetic planning component, and a motor execution system.

Although modern emergentist views of the phonology-phonetics interface and cascade models of downward information spreading have been developed in phonetics and psycholinguistics, classical aphasiology is still built on the idea of a fundamental divide between linguistic (i.e., phonological) and motor (i.e., apraxic, dysarthric) impairment. In this traditional view phonological impairment is grouped with agrammatism or lexical access problems among the genuinely linguistic dysfunctions, while all mechanisms located more downstream are banned from the core of neurolinguistic interest. This rift is still deepened by the widespread view that, on the other side of the abyss, the motor aspects of speaking need not be distinguished from the various other motor activities of the implied musculature, i.e., metabolic supply, emotional expression, or nonspeech voluntary movements, which turns speech motor control into an all-purpose slave system governed by but distinct from an omnipotent linguistic apparatus.

In my presentation I will sketch a different perspective by focusing on the *continuity* of the process through which phonological representations are translated into speech movements. The core argument will rely on two strands of evidence: (1) phonological impairment is not extraneous to the (perceptuo-) motor domain, since it can reasonably be considered to interfere with the retrieval and maintenance of stable auditory goals for action planning, and (2) dysarthria and apraxia of speech are not extraneous to the linguistic system because they are dissociated from nonspeech oral motor impairment, hence are specific to the domain of speaking. The argument will be bolstered by clinical, neuro-anatomic, and modeling data. From the viewpoint outlined here, the irreconcilable conceptual divide between a linguistic and a motor component of speech production is dissolved. I will sketch alternative explanations for the distinct clinical patterns of phonemic, phonetic, and dysarthric impairment which are based on the perspective of an integrated speech (perceptuo-) motor action system.