

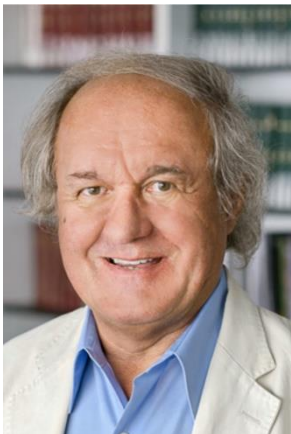
ENB Elite Master Program Neuroengineering (MSNE) Invited Presentation

Josef P. Rauschecker

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Internal models of the brain in speech and music

Abstract: At first glance, the monkey brain looks like a smaller version of the human brain. Indeed, the anatomical and functional architecture of the cortical auditory system in monkeys is very similar to that of humans, with dual pathways segregated into a ventral and a dorsal processing stream. Yet, monkeys do not speak. Repeated attempts to pin this inability on one particular cause have failed. A closer look at the necessary components of language, according to Darwin, reveals that all of them got a significant boost during evolution from nonhuman to human primates. The vocal-articulatory system, in particular, has developed into the most sophisticated of all human sensorimotor systems with about a dozen effectors that, in combination with each other, result in an auditory communication system like no other. This sensorimotor network possesses all the ingredients of an internal model system that permits the emergence of sequence processing, as required for phonology and syntax in modern languages.



Biography: Josef P. Rauschecker studied at Technical University Munich (TUM) and Ludwig-Maximilians-University (LMU) Munich, Germany (Electrical Engineering and Medical Science) and at the Universities of Sussex (Experimental Psychology and Artificial Intelligence) and Cambridge, England (Physiology). He received his Ph.D. (Dr.-Ing.) from TUM in 1980 for research performed at the Max Planck Institute (MPI) for Psychiatry in Munich and received his Habilitation (D.Sc.) in Neurophysiology from Eberhard-Karls-University Tübingen in 1985.

After working as a junior staff scientist at the MPI for Biological Cybernetics from 1981-1989, he joined the National Institute of Mental Health (USA) as a Senior Investigator in the Laboratories of Neuropsychology and Neurophysiology in 1989.

Since 1995, he has been a Professor of Physiology and Biophysics, Neurology, Psychology, and Neuroscience at Georgetown University, Washington, DC (USA), where he has also served on the university's Executive Council, Steering Committee and Director of Cognitive Science. Josef Rauschecker is the director of the Laboratory of Integrative Neuroscience and Cognition (LINC) as well as of an international education and research Program in Cognitive and Computational Systems (PICCS).

Talk is hosted by the Institute for Cognitive Systems (Prof. Cheng)

Tuesday, June 26th 2018, 5:30 p.m.

Theresienstr. 90, 80333 Munich, room N1135

All talks in the MSNE Invited Speaker Series are open to students, staff, and members of the public. Attendance is free.

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