

日時 2011/10/24 (月) 16:30-17:30

場所 文学部地下大会議室

講演者 Cesare V Parise (University of Oxford/Max Planck Institute for
Biological Cybernetics/Biefeld Universitat)

題目 The role of signals' correlation in multisensory integration
(多感覚統合における信号相関の役割)

要旨

The physical properties of the distal stimuli activating our senses are often correlated in nature; it would therefore be advantageous to exploit such correlations to better process sensory information.

Stimulus correlations can be contingent and readily available to the sensory systems (like the temporal correlation between mouth movements and vocal sounds in speech), or can be the results of the statistical co-occurrence of certain stimulus properties that can be learnt over time (like the relation between the frequency of acoustic resonance and the size of the resonator). Over the last century, a large body of research on multisensory processing has demonstrated the existence of compatibility effects between individual features of stimuli presented in different sensory modalities. Such compatibility effects, termed crossmodal correspondences, possibly reflect the internalization of the natural correlation between stimulus properties. During this talk, I will assess the effects of crossmodal correspondences on multisensory processing and report experiments demonstrating that crossmodal correspondences influence the processing rate of sensory information, distort perceptual experiences and lead to stronger multisensory integration. Moreover, a final experiment will be described investigating the effects of contingent signal correlation on multisensory processing, the results of which demonstrate the key role that temporal correlation plays in inferring whether or not two signals have a common physical cause (i.e., the correspondence problem). A Bayesian framework is proposed to interpret the present results whereby stimulus correlations, represented on the prior distribution of expected crossmodal co-occurrence, operates as cues to solve the correspondence problem.

References:

Parise C & Spence C (2008) Synesthetic congruency modulates the temporal ventriloquism effect. *Neuroscience Letters* 442(3):257-261.

Parise C & Spence C (2009) When birds of a feather flock together: Synesthetic correspondences modulate audiovisual integration in non-synesthetes. *PLoS ONE* 4(5):e5664.

Parise C & Spence C (in press) Audiovisual crossmodal correspondences. *Oxford handbook of synaesthesia*, eds Simner J & Hubbard EM (Oxford University Press, Oxford, UK).

Parise C & Pavani F (in press) Evidence of sound symbolism in simple vocalizations. *Experimental Brain Research*.

Parise C, Spence C, and Ernst M (under review) Multisensory integration: When correlation implies causation.

Parise C & Spence C (under review) Audiovisual crossmodal correspondences and sound symbolism: An IAT study.