Invitation

On behalf of the Hamburg Center of Neuroscience we would like to invite you

to the

18th HCNS Lecture

December 11th, 2023 | 5.00 pm

University of Hamburg, Mollerstraße 10, lecture hall

We are looking forward to meeting you there!

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Universitätsklinikum Hamburg-Eppendorf

Helmut Schmidt Universität
Universität der Bundeswehr Hamburg

Prof. Dr. Patrick Haggard

Institute of Cognitive Neuroscience
University College London, UK

"Sensory quality: from modality-specific channels to conscious experience"

Why do our various sensory experiences feel so different, given that they all depend ultimately on the arrival to the brain of essentially similar action potentials?

This fundamental question about perception has been asked for at least one hundred and fifty years, but has rarely been researched experimentally. In this talk, I will discuss recent experimental investigations of thermosensation. Sensations of warmth and cold are caused by neural transduction in two distinct populations of neural receptors, projecting to different classes of afferent neuron. Classical sensory physiology suggested that these afferents form specific thalamocortical connections functioning as "labelled lines" whose activation automatically and inevitably produces the corresponding sensory quality. According to this idea sensory quality is basically self-announcing: if a sensation occurs, there should be no doubt as to its sensory quality. I will report experiments with near-threshold thermal stimuli that aim to test the self-announcing feature of perception. In each trial, participants first reported whether they detected any thermal sensation, and then separately identified the sensation as warm or cold. Labelled line theories clearly predict no dissociation between detection and identification: if participants detect a thermal stimulus, they must know if it was warm or cold. Alternatively, one might also hypothesize a condition of thermal blindsight, where participants detect that a stimulus is present, but are unable to identify whether it is warm or cold. Our results broadly supported labelled line theories, and provided no clear evidence for thermal blindsight. Sensory quality indeed seems linked to receptor type. However, no satisfactory theory yet exists for how the brain constructs and maintains the linkage between the receptor origin of an afferent signal, and the corresponding conscious experience. I will suggest that this problem offers a tractable experimental and partial approach to some problems of consciousness.