SFB/TR 8 Spatial Cognition / IQN
Video Conference

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Rethinking the roles of selective attention and economical encoding inspatial vision

Considerable research points to a bottleneck in the extraction of visual information from the spatial environment. According to the traditional view, at any given moment selective attention allows only a small portion of the visual input to get through the bottleneck for further processing. Some processing can occur "preattentively" and guide this selection. Much of the early research on visual search aimed at determining what processing could occur preattentively, and what required selective attention.

While this view of visual processing has held sway for many years, it has also been problematic. How is that we can have such trouble searching for a simple symbol in a display, and yet be so good at getting the gist of a scene and navigating through our environment? My lab proposes an alternative, in which the visual system's strategy for dealing with limited capacity focuses on compression of the visual input, rather than on selective attention. I will demonstrate that this model can predict not only classic results in visual search, but also phenomena that were problematic for the traditional selective attention story. This suggests that there may be a fundamental, relatively low-level limit to a diverse array of visual tasks, from visual search and object recognition, through perception of our spatial environment and understanding of complex displays.

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