



When is now?

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Visual perception is not instantaneous: it takes a few milliseconds for light to be transduced in photoreceptors, tens of milliseconds for neuronal spikes to occur at successive levels of the visual hierarchy. Furthermore, the latency of responses varies across the visual field and the cortical hierarchy. The diversity of these physiological results makes it difficult to predict when is the perceived present.

In a series of experiments we asked participants explicitly to estimate when a stimulus is perceived within a fixed duration temporal interval. We show that the perceived time of a visual event depends on its position in the visual field. The events were reported earlier if they were presented in spatial proximity to the locus of spatial attention (exogenous or endogenous). Furthermore, we find a large bias to report events earlier when they were presented in the periphery. Finally, we show that the perceived spatial and temporal position of an object can be decoupled. While position of an object is perceived displaced in the direction of motion after the object was presented, it is perceived to occur earlier than the stimulus presented on a static background.

The results indicate that the perceived time of an event is not a timestamped readout of cortical activity. In contrast, it is determined by concomitant local processing, shifting the perceived temporal position of an event forward or backward in time.