



SEMINAIRE DE MAÎTRISE
ORIENTATIONS PSYCHOLOGIE COGNITIVE
ET PSYCHOLOGIE DU DEVELOPPEMENT

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**« Mechanisms underlying inhibition of saccadic
return »**

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Visual exploration is an active process that involves sequentially shifting gaze from one region of interest to the next. It has been suggested that effective exploration is aided by an inhibitory mechanism that biases gaze against returning to a previously visited location. The mechanisms underlying this inhibitory effect are currently unknown. I will present an account of inhibition of saccadic return (ISR) in terms of evidence accumulation models of choice and reaction time. These models assume that evidence is accumulated over time to a response threshold. Within this framework, ISR could reflect a reduction in the rate of accumulation or an increase in the effective response threshold for return movements. I will present data from a novel, gaze-contingent saccade sequencing paradigm, in which observers execute sequences of 2 or 3 saccades. Observers are consistently slower to return to the immediately previously fixated location. Model fits suggest that this effect is mediated by a reduction in the accumulation rate for return saccades. It could be argued that ISR is only adaptive when the visual environment and the observer's goals do not change rapidly. In subsequent experiments I will examine the sensitivity of ISR to the probabilistic structure of the context. In other words, does ISR vary systematically with the prior probability that a return movement is required? Data will be presented to show that this is indeed the case and model fits suggest that this adaptation is mediated by changes in the response threshold. It appears that ISR is a "default" assumption of the visual-saccadic system, reflected in the rate at which sensory information is processed. Whether or not ISR is manifest in overt behaviour depends on the flexible adjustment of the response boundary, which is sensitive to the probabilistic structure of the local context.



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