



## Neuroscience 2002 Abstract

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**Abstract Title:** Up-down asymmetry in memory guided saccadic eye movements are independent of head orientation in space.  
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A vertical asymmetry in memory guided saccadic eye movements has been previously demonstrated in humans and in Rhesus monkeys. In the upright orientation, saccades generally end several degrees above the target. The origin of this asymmetry has remained uncharacterized. In the present studies we were interested in investigating whether the asymmetry in memory saccades is expressed in a head-fixed or space (gravity)-fixed coordinate system. Thus, we positioned two rhesus monkeys in three different orientations: upright, right-side-down (RSD) and left-side-down (LSD). A target light flashed on a screen 22cm from their eyes in one of eight directions, including up, down, left, right and oblique orientations. Saccade amplitudes of 15 or 20 degrees were interleaved. Our results confirm previous observations regarding an asymmetry in upright orientation: a significant upward vertical asymmetry of 5.6 degrees existed for memory saccades in all directions. Saccade errors made from RSD and LSD postures were partitioned into components made along the axis of gravity and along the major body axis. The upward asymmetry along the body axis was 5.5 degrees. However, the upward vertical asymmetry in gravity coordinates was statistically insignificant (0.6 degrees). Thus, the upward asymmetry of memory guided saccades is independent of head orientation in space and is maintained in head-coordinates.

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