Asymmetry and Similarity Phenomena in Backwards Masking Experiments Suggest Internal Reconstruction.

Tsvi Achler
Los Alamos National Labs

Luis Bettencourt
Los Alamos National Labs

Garrett Kenyon
Los Alamos National Labs

Abstract: How the brain processes pattern mixtures is not well understood. The prevailing views are 1) that difficult tasks are processed in serial, and easy tasks in parallel 2) in fast image presentations with effective masking leaves little time for re-entrant neural dynamics other than feed-forward, excluding the possibility of top-down processing. We hypothesize that to process pattern mixtures, the brain creates an internal copy which we call reconstruction. This reconstruction process displays difficulty with similarity and asymmetry effects. Our model predicts that Similarity and asymmetry effects should also occur with fast backwards masking 1) indicating neither a strictly parallel nor serial structure 2) suggests that top-down reconstruction occurs even with fast masks because the brain is processing the target and mask as a mixture.