# Complementary processing systems: A PDP model of the simultaneous perception of multiple objects

**Cynthia Henderson**
Stanford University

**James McClelland**
Stanford University

**Abstract:** Illusory conjunctions in normal and simultanagnosic subjects are instances where the binding of visual information fails to function correctly. When presented with multiple objects simultaneously, simultanagnosic patients and normal subjects under conditions of attentional loads or brief presentation times often erroneously report miscombinations of features of the objects. A connectionist model of multi-object perception examines how the concurrent perception of more than one object could occur in normal subjects and become deficient with shortened processing times. In this model, the correct identification of two objects is accomplished through lateral connections between the ventral and dorsal pathways. Lesioning of the dorsal pathway produces failures in multi-object recognition characteristic of the effect of parietal damage in simultanagnosia. It is hoped that the functioning of this model might help elucidate possible processes underlying the correct solution of the binding problem in normal subjects.