

4 Serial grouping of 2D-image regions with object-based attention

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So far, the experiments in this thesis have focussed on how figure-ground segregation is accomplished through interactions between lower and higher areas in the primate visual system. However, if we want to know how we perceive objects and perceptually group the elements of an object together in such a way that we can use it for a behavioral response, we will also need to understand how the attentional selection of an object is established. The attentional perceptual grouping process is a relatively slow, incremental process, but its exact time-course remains unknown. In this chapter we present the neurocomputational *growth-cone model*. This model takes into account that visual areas higher in the visual hierarchy have larger receptive field sizes and can thereby contribute to a fast perceptual grouping process. The output of the model is validated against other models by comparing it to the behavioral data of human participants. The experiments in this chapter aim to answer RQ5 and RQ6.