

Many researchers propose that human vision parses shapes into component parts for purposes of recognition. In a companion to this paper, Singh, Seyranian & Hoffman (1997) expand on Hoffman & Richards' (1984) minima-rule by presenting a part-cut rule for parsing silhouettes. This part-cut rule divides a silhouette into parts using straight-line cuts whose precise position depends on several geometric factors. We report six experiments that explore these factors: (1) the length of the cut, (2) the area of a part produced by the cut, (3) the moment of inertia associated with each axis of symmetry that is cut, (4) the local symmetry of the end points of the cut and (5) the strength of the extremum at these end points. Subjects cut cross-shaped and L-shaped figures in both free-hand and forced-choice tasks. These experiments reveal that the length of a cut is a key factor, with almost all subjects preferring to make shorter cuts. Area is also an important factor: some subjects prefer to cut off small-area parts and some prefer to cut off large-area parts.