

◆ **Local cues from specular highlight motion influence global shape perception**

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For a stationary observer and a single stationary light source, the motion of a specular highlight relative to surface markings on a rotating object varies inversely with its Gaussian curvature. Earlier we reported that highlight motion could override other structure-from-motion cues. Observers viewed movie sequences of Phong-shaded ellipsoids rotating about the vertical axis, whose 3-D curvature was conveyed by static and dynamic cues from shading and texture elements, and whose central portion was only visible through a rectangular window. In a two-alternative forced-choice task, observers were asked to judge which ellipsoid had greater curvature was 'more pointed') along the axis perpendicular to the screen (z axis). In one task, depth along the z axis was varied while the highlight-relative motion was made either correct for 3-D curvature, or near zero, so that the highlight appeared to be almost 'stuck-on' to the surface. Three out of four observers judged ellipsoids with 'stuck-on' highlights to be as 'pointed' as those with up to twice the Gaussian curvature. In this study it is reported that for some observers, perceived 3-D curvature is determined by highlight-relative motion over a range of (a) highlight motions and ellipsoid curvatures, and (b) visible portions of the ellipsoid including that in which the bounding contour is fully displayed; and that these results do not arise from possible learning of correlations between correct **highlight motion and 3-D curvature**. The results illustrate that a local cue can determine the global percept of shape.

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