

# Visual motion and the perception of surface material Demonstrations

## **Motion can affect material appearance**

The first half of the movie simulates a chrome teapot rotating in mid-air. The appearance is what one might expect, that of a shiny chrome teapot. Half way through the movie, the reflection gets painted on to the teapot making a "sticky reflection." The painted-on pattern mimics what one would see in the reflection of a perfectly reflecting chrome teapot. Now the body of the teapot appears more or less like a painted matte object during the second half of the movie. Try stopping the movie. The teapot reverts to a more shiny appearance.

## **Croissant-shaped object**

Now with a croissant-shaped object.

## **Polygonal object**

Many observers report that this polygonal object seems to look transparent rather than shiny-opaque.

## **'Wrong' optic flow**

This shows the "wrong" optic flow, in which the environment is moving about a different axis than the teapot.

## Teapot

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The highlights at points of high curvature in this last one conflict to some extent with the matte interpretation, and thus one can see these points as from a shiny object. Also, note the lack of contact information (inter-reflections are not modeled in this rendering) for the handle and spout.

Movies were created by Bruce Hartung in collaboration with Dan Kersten and advice from Ted Adelson. The measured illumination map was obtained from <http://www.debevec.org/Probes/>.

This study was reported at the 2002 meeting of the Vision ScienceS Society in Sarasota, Florida:

Hartung, B., & Kersten, D. (2002). Distinguishing Shiny from Matte. Presented at Vision Sciencies, Sarasota, Florida.

For more on human perception of shiny objects, see "Visual Motion and the Perception of Surface Material" |<sup>1</sup>

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1. Katja Doerschner, Roland W Fleming, Ozgur Yilmaz, Paul R Schrater, Bruce Hartung, and Daniel Kersten. Visual motion and the perception of surface material. *Current biology*, 2123: 2010–2016, 2011. doi:[10.1016/j.cub.2011.10.036](https://doi.org/10.1016/j.cub.2011.10.036).