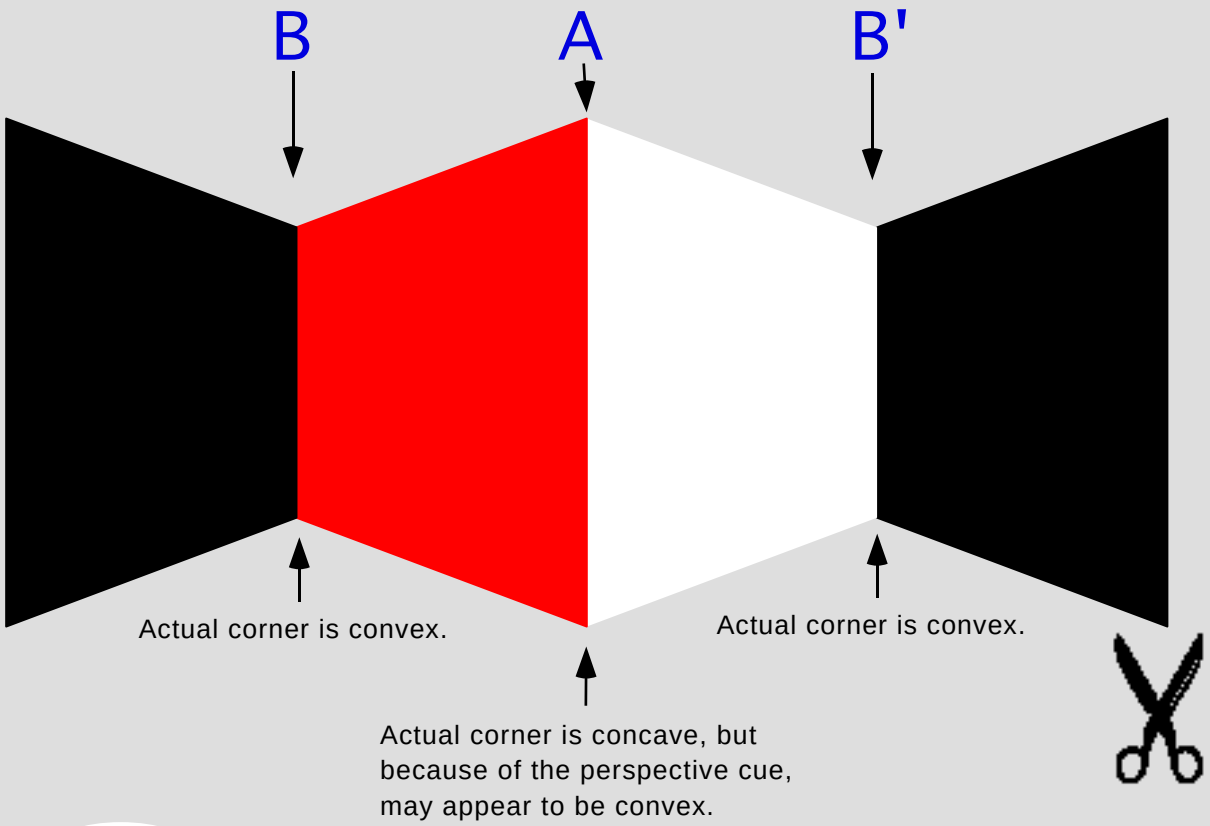
A Trapezoidal Chromatic Mach Card

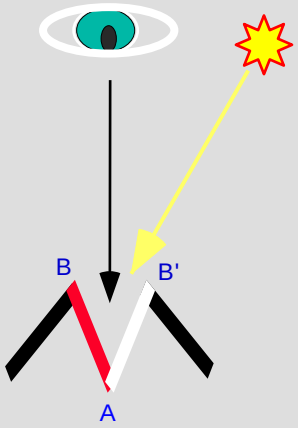
3D shape perception influences colour perception via mutual illumination.

Our original study, reported in Nature (Bloj, Kersten, & Hurlbert, December 23, 1999), used a pseudscope to reverse the apparent depth relief in a folded card. You can experience a similar reversal by making a trapezoidal card.

Stimulus preparation. 1. Print out this page on a color printer. 2. Cut out the figure on the right with a scissors. 3. Fold it in half along the mid-line (A) so that the red panel faces the white panel. 4. Fold again (lines B and B') so that the two black panels face outward.

Demonstration. Set the folded card on a flat surface as shown below. Orient the card so that the red panel receives direct lighting from a lamp or window. The red side should thus reflect a little pinkish light onto the white side. You may have to pinch crease A to make the angle between the red and white sides small enough. The concave corner A should be farther from you than convex corners B or B' The idea is the perspective is opposite to what you are used to--the longer edge (A) is further (rather than nearer) from you than from B or B'. This perspective trick can now be used to make the card *appear* as though the red side is facing *away* from the white card. View the card steadily with one eye until the card's geometry appears to change and A seems to be closer to you than B or B'. I.e. crease A goes from appearing concave to convex (like looking down on the "roof" of a house). At this point, you should also see that the white panel appears to change from pinkish white to magenta.





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