MONDAY, MAY 5, 2008

Perpetual collision illusion

Here is a sneak preview of one the illusions that my laboratory will be presenting at the Neural Correlate Society's "Best illusion of the year" contest that will be held next week (May 11th) in Naples, Florida. The illusion was devised to investigate questions related to contrast and visual grouping (see article).

Warning: the illusion involves rotating, high-contrast diamonds. If you are prone to migraines or epilepsy, or get motion sickness, please do not stare at this illusion.

[The illusion is a flash file and will not appear in an RSS feed]

Description: You are looking at columns of pink and yellow diamonds separated by columns of spinning black/white/gray diamonds. The pink diamonds appear to move to the right; the yellow diamonds appear to move to the left.

There are two main things to notice about the display:

1. The pink and yellow columns are not really moving. Don't believe me? Click and drag the spinning black/white/gray diamonds to move them out the way. When you do, you will see that the spinning diamonds are placed on top of a completely stationary colored background.

2. The motion is perpetual. The pink and yellow fields seem always to be headed towards (or away from) each other, but they never meet (and they never grow farther apart). This aspect of the effect can be quite mesmerizing, so be careful.

The motion originates from the edges between the spinning diamonds and the colored fields. The edges of the diamonds are tilted at -45 or 45 deg; the motion, therefore, should always shift in an oblique direction. To get a better handle on this, click the "add/remove diagonal bars" button. The diagonal bars cover up opposite sides of the rotating diamonds so that only every other edge is shown. When the diagonal bars are present, the pink and yellow fields move diagonally.

Why, then, should the pink and yellow fields appear to move horizontally when the diagonal bars are not present? Not to be too technical, but it seems to me that either the visual system is computing motion for the colored diamonds from a vector sum of the motion at the edges; or the visual system is using the information at the edges to define an object (in this case, a diamond), and motion for the object takes precedence over the motion that originates at the edge.

I have also included a button that allows you to "add/remove horizontal bars." The horizontal bars stretch across the image so that the colored diamonds turn into colored triangles. Nonetheless, instead of seeing individual triangular segments, you perceive the image as a series of colored diamonds that appear to move behind a bar. It is as if the visual system joins the triangles to form the diamonds, so that you perceive a "whole" object.

I will be on the road next week (traveling to the conference). I will try to post a new illusion on Tuesday the 13th or Wednesday the 14th.

POSTED BY ARTHUR SHAPIRO AT 1:05 AM SHARETHIS
LABELS: ART, BRAIN, COLOR, ILLUSIONS, MOTION, NEUROSCIENCE, PERCEPTION

6 COMMENTS:

Christopher said...

Hey, just wanted to say I'm really enjoying the blog! I hope you continue to post more of these illusions for a long time.

MAY 5, 2008 12:43 PM

Josh said...

This is awesome! Its cool how you create an illusion, provide image options like vertical and horizontal columns, and then explain the science, all in one blog.

MAY 5, 2008 2:33 PM

Anonymous said...

Increased my awareness that the language(s) in use to strive to explain also creates illusions.

MAY 7, 2008 10:06 AM

amiya said...

Losfer words! Incredible illusions. Wish David Copperfield checked these himself.

MAY 8, 2008 3:38 AM

The Science Pundit said...

I had no idea what the horizontal bars did until I read your description, which is when I realized that I was only looking at triangles (but still saw the diamonds).

MAY 10, 2008 6:11 PM

plover said...

Very interesting stuff.

In case variant perceptions of the illusions are of interest to you, I thought I'd note that with the horizontal bars, it's possible to shift between perceiving the moving objects as diamonds with bars in front of them and pairs of tip-to-tip triangles with bars between them.

I've also found a way to get the pink and yellow diamonds to pretty much stop moving (in the non-barred mode). One trick to doing this (and it does not seem easy to do consistently) appears to be to focus on the point where two of the yellow diamonds meet or the center of a spinning diamond. What happens is something like the rotating diamonds take on the appearance of octahedra which are spinning as if they were rolling toward me. My guess is that relevant perceptual change is convincing oneself that the blue/yellow diamonds and the spinning diamonds are not in the same plane.

MAY 12, 2008 8:44 PM

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ABOUT ME

ARTHUR SHAPIRO

Associate Professor, Bucknell University, Department of Psychology and Program in Neuroscience. This blog is intended as a venue to discuss the "illusions" that I (and many vision scientists) create in order to study visual perception.

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