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See an image sent back by the first craft to dive to the bottom of the Mariana Trench for more than a decade
- Methanol challenges hydrogen to be fuel of the future**

18:03 02 June 2009 | 42 comments

Despite intense research, the hydrogen economy remains an elusive dream, but a greener way to manufacture methanol is a reminder there are other options
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Musical ability is linked to gene variants that help control social bonding, strengthening the notion that music evolved to cement human relationships
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Nature writer **Richard Conniff** has spent his career in the field, doing dangerous things like swimming with piranhas. He tells us why he does it

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DEEP SEA



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Now you see it: Best visual illusions of 2009



VISUAL ILLUSION OF THE YEAR

Every visual illusion - from the way that simple lines drawn on paper seem to form a cube, to the [logic-defying labyrinths](#) of M. C. Escher - works exactly the same way: they expose discrepancies between physical reality and our perception of that reality.

That makes visual illusions appealing objects of study for neuroscientists: they offer clues to how our brains handle the information we receive about the outside world, in particular how we process visual images.

"In most cases, we don't know how they work or why they work in neural terms," says [Susana Martinez-Conde](#), a perceptual neuroscientist at the Barrow Neurological Institute in Phoenix, Arizona.

That's why a panel of scientists - of whom Martinez-Conde is one - organise the [Visual Illusion of the Year Contest](#). Now in its fifth year, it features dozens of illusions created by scientists, artists, computer programmers and even the occasional magician.

New illusions offer potentially new insights on the workings of the human mind: but they're fun, too. You can try out some of the winning entries for yourself below.

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Does evolution explain human nature?

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VIDEO

Contrast colour

If you stare at this rotating circle, you should see three concentric circles: pink, blue and green. But when the circle stops moving, you can see that the arcs that create these circles are actually all black

VIDEO

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ANIMATION

› Curveball



[Click here](#) to try this illusion, created by Arthur Shapiro, in which a ball falls in different directions depending on how you look at it

ANIMATION

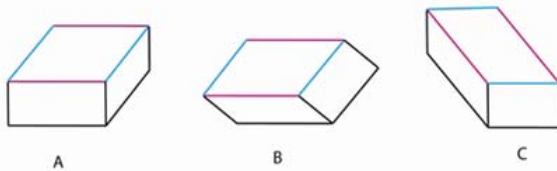
› Coloured dove



[Click here](#) to see an animated dove apparently change colour, in an illusion created by Yuval Barkan and Hedva Spitzer

IMAGE

› Another turn



Despite what you might think, the three parallelograms formed by the pink and blue lines are identical. Each blue line is the same length as all the other blue lines, and the same is true of the pink lines.

Our brain assumes that the diagonal lines in boxes A and C are foreshortened, which has the effect of making us perceive them as longer than they actually are. Boxes B and C are identical, except that B has been rotated counter-clockwise.

The puzzle for neuroscientists: why doesn't our visual system stretch a horizontal line as much as a diagonal?

Created by [Lydia Maniatis](#) of American University, Washington, DC.

IMAGE

› Illusion of sex



The only difference between these two faces is their degree of contrast. Yet one appears female and the other male. That's because female faces tend to have more contrast between the eyes and mouth and the rest of the face than male faces.

[Richard Russell](#), the Harvard University neuroscientist who created the illusion, has previously found that increasing the contrast in female faces makes them more attractive. Conversely, reducing contrast makes a male face easier on the eyes.

TRY THIS AT HOME

› Tube illusion

› Stereo vision creates new contours

This is a new twist on a famous visual trick originally discovered by Italian psychologist Gaetano Kanizsa

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If you look through a cardboard tube with one eye at a bright wall, the portion of the wall viewed through the tube looks much brighter than the wall seen with the naked eye. It is almost as if it was being illuminated with a flashlight. Colour and texture seem to be similarly enhanced.

This illusion, which takes a few seconds to take effect, was recently described by a team of researchers from the [Sanford USD Medical Center](#), the [University of](#)

[Freiburg](#) in Germany, [PositScience](#), and the [University of Sassari](#) in Italy.

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Coloured Dove

Tue Jun 02 13:17:05 BST 2009 by [John Gordon](#)

They all work for me but when I use the green background it becomes pale purple/pink when the pale green dove starts to move. Why? The other three (red, blue and orange) backgrounds appear white with a pale dove.

Also with the red and orange backgrounds the dove appears to be the same, or very nearly the same, colour when the background turns white. Why?

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Peripheral Vision Perception

Tue Jun 02 14:05:33 BST 2009 by [Ivor Clark](#)

The spinning ball illusion is very interesting but also a bit disconcerting. Are there real world examples where this effect could be dangerous?. ie misjudging the flight of a spinning ball for example, dodging the perceived direction of travel, or any spinning object for that matter?. I wonder if this effect is known in sporting circles, could explain why my fave footie team is full of players with naff peripheral vision!. Oh and what about things like driving at night and seeing flashing lights (police?) out of peripheral vision - examples of misjudging the speed and position of an object could be crucial, indeed for pilots too. Thoughts?.....

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Peripheral Vision Perception

Tue Jun 02 15:24:04 BST 2009 by [Tom](#)

Most athletes are coached to keep their eye on the ball.

Have you seen the clip of the group of kids throwing basketballs? It's scary how easily the mind is fooled.

So here is the clip. Watch it only once and count how many times the kids in the white shirts pass the ball.

<http://viscog.beckman.illinois.edu/flashmovie/15.php>

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Tube Enhancer

Tue Jun 02 15:49:26 BST 2009 by **Rambert**

I find light being concentrated on more of the eyes cones enhances vision for example if I view text from a distance often looking through my hand curled as if holding a pipe helps increase detail and clarity by removing unnecessary external information.

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