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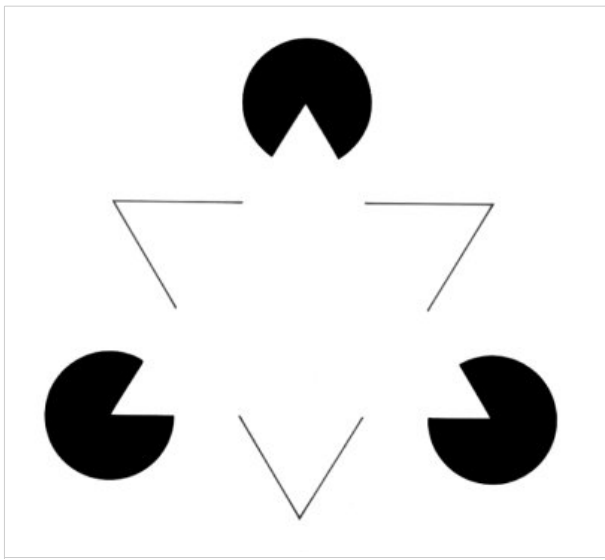
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## Cool Visual Illusions: Kanizsa's Triangle In 3D, and Moving

Category: [Visual Illusions](#)  
 Posted on: May 20, 2007 1:44 AM, by [Chris](#)

Everybody's seen Kanizsa's triangle:



It's a simple illusory figure illusion, first reported by Kanizsa(1). The illusion is likely caused by the processes that the visual system uses to separate figures from their ground(2), but to date there doesn't appear to be any consensus about exactly how these processes cause the perception of illusory figures ([here's a list](#) of several competing explanations).

Recently, researchers in the [Human Technology Laboratories](#) have begun producing 3D versions of the Kanizsa triangle:

**Profile**



I'm a cognitive psychologist who posts on all areas of cognitive science, including psychology, philosophy, neuroscience, linguistics, and anthropology. If there's a topic in cognitive science that interests you, and you would like to see me post about it, feel free to email me with your request at [mixingmemory-at-gmail.com](mailto:mixingmemory-at-gmail.com).

The lovely banners were created by [Anton Oetli](#) and [Todd Hartman](#).

April is the cruelest month, breeding lilacs out of the dead land, mixing memory and desire, stirring dull roots with spring rain.

Proud  
 Neville  
 Chamberlain  
 Atheist  
 I ♥ +

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The [Mixing Memory Reading Group](#) is a place for experts and non-experts alike to discuss books and papers in cognitive science.



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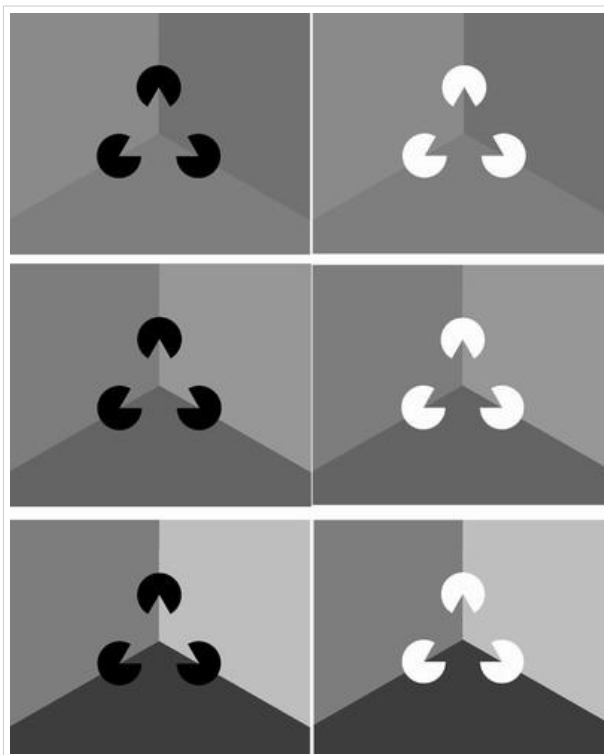
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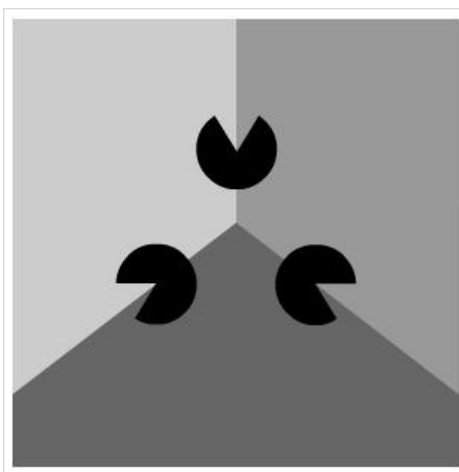
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These figures are created by starting with the original Kanizsa triangle, and adding three regions with different shades (luminances), which converge in the center of the illusory triangle (see the explanation [here](#). Here's what it looks like with the three little Pac-Man figures reversed, so that the contours of the triangle no longer appear (from [here](#)):



As if a 3D version wasn't enough, two members of the HT Lab team, Pietro Guardini & Luciano Gamberini, won second place in this year's [Best Visual Illusion of the Year](#) contest with moving 3D Kanizsa triangles (Kanizsa pyramids, I guess). You can see the moving pyramid [here](#). All they do to make it look like the pyramid (which isn't actually there, remember!) is moving, it move the edges of the different luminance regions around. Man, our visual system is easily fooled.

<sup>1</sup>Kanizsa G. (1955). Quasi-perceptual margins in homogenously stimulated fields. *Rivista di Psicologia*, 49, 7-30.

<sup>2</sup>Liinasuo, M. Rovamo, J., & Kojo, I. (1997). Effects of spatial configuration and number of fixations on kanizsa triangle perception. *Investigative Ophthalmology & Visual Science*, 38, 2554-2565.

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I have no idea what the typical "reaction time" is to see the triangle in the basic illusion, but it took me a while. I looked for maybe 5 seconds, saw no illusion, and then scrolled down and read a bit. Scrolled back up ... nothing. It wasn't until I focused directly on the centre of the figure that the illusion appeared.

However ... it was not a triangle; it was a six-pointed star ("Star of David"). It took a bit of effort to actually see the illusion as a triangle.

Posted by: [Scott Belyea](#) | [May 20, 2007 09:28 AM](#)

I was disappointed at first, thinking how weak the first-place illusion was, how there was nothing weird at all about a picture of a tower next to another picture of the same tower from a different angle (so that it looked like it was leaning more). Utterly fantastic. Whatever next?

Posted by: [Enigman](#) | [May 20, 2007 11:22 AM](#)

I was at the vision science conference and this contest, and the reason this illusion got second place was because the guy showing it was hilarious... he was dancing and singing and his slides were very amusing. I didn't even really get the illusion when I was there -- its definitely not such a great illusion.

Posted by: [Tim](#) | [May 20, 2007 10:52 PM](#)

Tim, it's a very simple illusion, but I think it's awesome. That we see the boundaries of a triangle just because they're suggested by three little pac-man figures is cool enough, but the fact that you can make those nonexistent boundaries 3D, and then move, blows me away.

Posted by: [Chris](#) | [May 20, 2007 11:06 PM](#)

To be honest, I think the illusion is hardly special. It is no more special, in my opinion, than arranging a few dots in a triangular formation to make it look like there's a solid triangle.

The wedges and pac man figures are glorified dots. They create contrast on the background, much like a black dots would on a white space. (I hope I'm clear with the explanation)

Posted by: [buzz](#) | [May 21, 2007 03:57 PM](#)

Has anyone ever investigated the relative salience of these illusions? It seems like if we surveyed, say, 1000 people online, and asked them to rate the salience of each illusion from 1 to 5, and then normalized the rankings we would see two things.

First, we could analyze the co-variance of the different illusion saliences and thereby infer a common mechanism.

Second, we could find out to what extent people differ in processing visual information. The most interesting result would be if someone had a hard time seeing the triangle and an easy time seeing the tower, but others were the reverse.

Posted by: [Max](#) | [May 21, 2007 09:51 PM](#)

Chris, I didn't mean it wasn't a cool illusion -- it is! I just meant its hard to see for me (and apparently others, like Scott above). I can easily switch back and forth between seeing nothing interesting happen and seeing the pyramid, and the pyramid isn't a very stable percept even when I see it.

Posted by: [Tim](#) | [May 22, 2007 10:29 AM](#)

Tim, ah, OK. It's pretty strong for me. It might be interesting to look at individual differences in these sorts of illusions. At the very least, it might allow us to distinguish between the various explanatory hypotheses.

Posted by: [Chris](#) | [May 22, 2007 02:39 PM](#)

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