

Thaumatrope

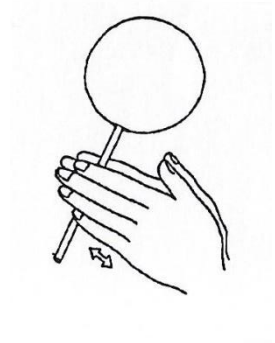
Your brain is amazing, collecting and storing huge amounts of information... but it *can* be fooled. A thaumatrope (THAW- ma - trope) is a device that tricks your brain into thinking two pictures are actually one. Make your own thaumatrope, using pictures you draw yourself or a template of MSI exhibits.

You will need:

- A piece of paper and pencil **or** the template
- Scissors
- Straw
- Stapler
- Markers or crayons to color the pictures

Directions:

- Draw a rectangle (approximately 3" x 6") on the paper, or print out the template.
- Cut out the rectangle and fold it in half so you have two squares. (If you're using the template, make sure the pictures are on the outside.)
- Draw a picture on one square and another picture on the other square. The pictures should be of things that naturally go together, like a chick and an egg.
- Place the two squares back-to-back and put the straw between them so it covers the whole square.
- Staple the squares to the straw.
- To make it work, hold the straw between your two hands and twirl the pictures by moving your hands back and forth. Adjust the speed until you see the chick inside the egg.



Tips:

- Hold your hands at arm's length to get the best view of the two pictures merging into one.
- If your thaumatrope flops when you use it, staple the squares along the straw rather than across the straw. You can just add a staple over any other staples.

How it works:

When you look at something, your eye and brain hold onto that image for a short time. If another image is seen before you have forgotten the first one, you will see both together. This is called "persistence of vision." This is the basis of motion pictures, where still images are moved in front of your eyes at just the right speed to make them seem like continuous motion.

Go Beyond:

Look closely at how the thaumatrope works. Test your observations with experiments.

- What is the best speed to twirl the thaumatrope so that the pictures merge?
- What happens if you go too fast or slow?

Think about how the thaumatrope is put together. Try making some changes. If something you try does not work, use what you have learned and try again.

- Try making the thaumatrope out of stiffer paper, or using a wooden stick.
- What other pair of images can you think of to draw on a thaumatrope? Think about things go inside of one another, like a ball inside a glove, or objects that you can split in two and reassemble in the thaumatrope, like two halves of a heart. Try out different ideas.
- Create some images of MSI exhibits that you like to merge together. Perhaps a person and the *Science Storms* vortex.

What other things are like the science and engineering principles used in the thaumatrope?

- Investigate how animated pictures are made.

