Make a Pinhole Projector!

Take a look around you. Everything appears right side up. Although this makes sense, it's not how your eye sees it. Images that are cast upon your eye's light-sensitive screen (called the retina) are upside down. It takes a learned brain trick to flip these images right side up so that they match the look of the real world.

What You Need:

- Dark-colored plastic cup
- Wax paper
- Scissors
- Rubber band
- Pushpin

What You Do:

1. Use the pushpin to punch a hole in the center of the cup's bottom. Cut out a piece of wax paper slightly larger than the cup's mouth. Stretch this paper across the mouth of the cup. Use a rubber band to secure the paper.
2. Darken the room. Aim the pinhole at a bright window or lamp. Look at the wax paper. What do you see? How does the image compare to the actual scene?
3. Don't be surprised if you have to rotate the cup around a little bit in order to get the right angle.

Caution: Never look directly at the sun.

What's Going On?

Congratulations! You've built a pinhole viewer. Light that came through the window entered into the hole of your viewer. After entering through the hole, the light rays continues on a straight path. This caused the upper light rays to strike the bottom part of the wax paper screen. Likewise, the lower light rays struck the upper part of the screen. The image that these rays produced was flipped upside down!

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