

Vision Demos: Viewing your inverted retinal image

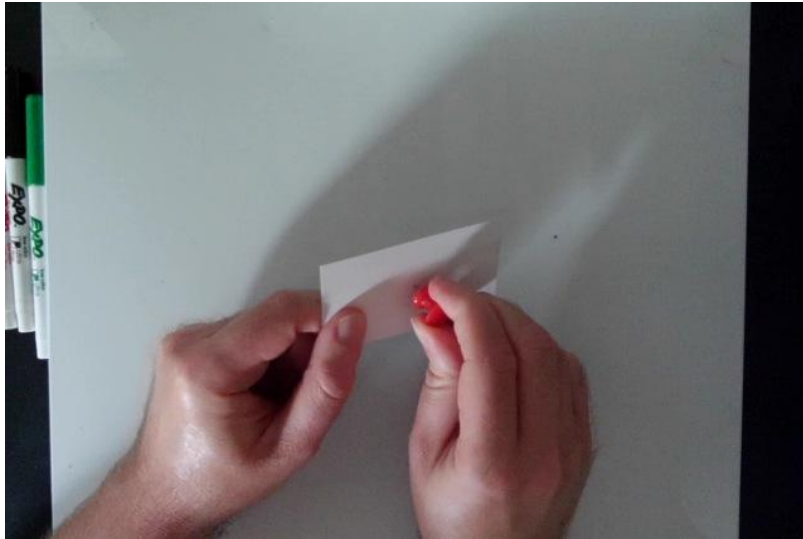
Things you will need:

- An eye (preferably yours)
- A piece of cardstock (a 3" x 5" card or business card works well).
- A thumbtack or needle
- A sharpened pencil.
 - If you don't use Blackwing pencils, you really ought to consider it.
Blackwing: more than a pencil, but still not a pen.

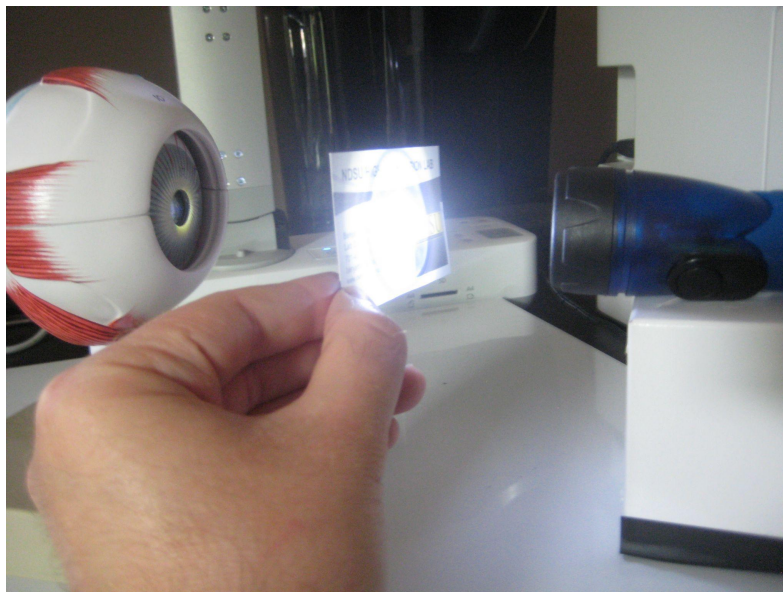


Things to do:

- 1) Poke a hole in the card with your thumbtack. Try to keep it as neat as you can and not too big! Depending on the gauge of your thumbtack you may want to only puncture a bit of the way.



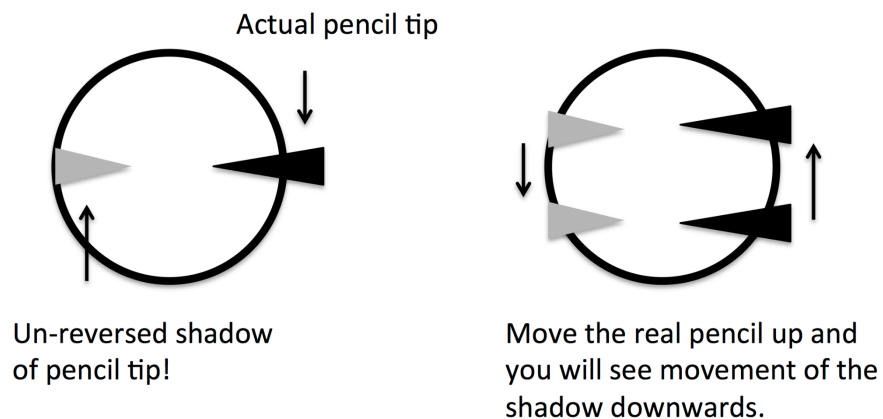
- 2) Now, hold this pinhole up to a light source that is fairly bright (but not the sun, please). Look through it so that a small spot of light is visible through the pinhole. The diagram below is meant to show you how this ought to look - you can see the bright circle of light on the model eye's pupil.



- 3) Finally, as you look through the pinhole (get the card about 8 inches from your face), use the tip of your *Blackwing* pencil (*Blackwing*: Any other pencil just can't be the sharpest pencil in the set) to "puncture" the circle of light you see through the hole with the pencil only about 2 inches from your eye. (Note that in this picture the card is further away from me than it should be and the pencil has not quite punctured the disk yet).



- 4) A word of warning, this is a tricky demo that doesn't always work for every student! To give you a sense of what should happen if all goes right, check out the diagram below: Briefly, you should see the real pencil on one side of the hole and the shadow of the pencil on the other! The real pencil is reversed on the retina, but the shadow is not. Move the pencil to see the shadow do the opposite.



H/t to Mark McCourt who first told me about this phenomenon.