A hexaflexagon is a paper toy, an advertising display device, a “storytelling contraption,” and an interactive demonstration of geometry that requires physical activation in order to be “read.” Through the actions of bending, twisting or rotating, these paper gadgets reveal sequential, looping frames—providing an addictive format to tell stories and jokes, to reveal nested information, to create art or simply to provide a satisfying outlet for nervous energy.

The general format of “flexagon” was invented in 1939 by mathematics student, Arthur H. Stone, who—together with his colleagues Bryant Tuckerman, Richard Feynman and John Tukey—formed the Princeton Flexagon Committee. They devised several different forms of flexagon and studied them as a bridge between geometric topology and more abstract mathematics. (perhaps a more specific example of how one has been used creatively here?)

It is difficult to explain why, in our age of sophisticated tech toys, a humble paper hexaflexagon (otherwise known as a tri-kaleideocycle) remains so intellectually and physically pleasing to manipulate. Perhaps it serves as a reminder of the underlying complexity and magic that exists in the physical world. That, all around us, mind-bending possibilities lie dormant within materials as simple as the unassuming piece of paper.
WHAT CAN THIS FORMAT DO?

Here are some ideas for how to use this 4-frame hexaflexagon in your own project.

TELL A 4-FRAME SEQUENTIAL STORY

TRAVEL FROM NEAR TO FAR

EXPOSE PEOPLE’S INNERMOST THOUGHTS

SHOW THE INSIDES OF SOMETHING
1. Using your finger (or a bone folder), crease the score lines forward and backward to make them very flexible. You are training the paper to work as a flexagon. (When finished, you should see rows of pleasingly crisp triangles.)

2. Using your choice of glue, double-sided tape, or ATG adhesive, adhere the tabs to the opposite end of the flexagon with the pattern facing outward. You now have a paper loop.

3. Poke every other lateral score line inward, so that when viewed from the top, the form looks like a radially symmetrical - pointed star.

4. Use a mountain fold to tuck the small triangles (along the straight edge) into the main paper loop.
5. Flip over. Begin tucking in the triangles—as if you are trying to turn the shape inside-out on itself.

6. Continuing to work from the bottom, tuck in the final row of triangles.

7. Gently press the top and bottom of each hexagon to turn it into a bowtie shape. Before the flexagon is complete, the loose triangular flaps must be glued into place, closing the loop. Do this by matching up the corresponding colors.

Take your new flexagon for a spin by allowing it to rotate in on itself over and over again.

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