

The Hollow Einstein

A 3D portrait of Albert Einstein engraved into a crystal. Viewed from the back, it generates the so-called “Hollow Face Illusion”: Einstein’s face seems to follow the observer.

One of the most impressive optical illusions occurs when you look into a hollow face mask. If the lighting is right, you don’t see a hollow mask, but a normal, convex face. However this apparently normal face has a weird and spooky property: If you look at it while you walk past, it seems that the face is always facing you and that its eyes are following you constantly. This effect is called the “Hollow Face Illusion”.

How does this optical illusion work? It has been known for over 200 years, but it still hasn’t been fully explained. One plausible explanation is that the human face is more familiar to our brain than any other perception. It is the first thing we see after we are born and we rely on it to assess the character and intentions of other human beings. Nevertheless, the process of vision does not just depend on the optical stimulus of the brain. It depends at least to the same amount on experience and imagination, which leads to the fact that we can’t help it but interpret the hollow mask as a normal face.

Why does the face follow us with its stare? A simple investigation can explain this:

Take the crystal block and hold it so that the convex side of Einstein looks straight at you. If you turn him a bit so he looks at your left shoulder, you can see the whole of the left hand side and only part of the right hand side of his face.

Now turn the crystal block around and look straight into the hollow side of Einstein’s face. Turn him a bit in the same direction as before. This time you can see the whole of the right hand side of his face and only part of the left hand side - exactly opposite to before. Since we can’t help but see the hollow face as a normal convex face, we have to experience the face as turned towards us because we see its right hand side fully and the left hand side only partially. The more you turn the block, the stronger this effect gets. This is exactly what makes the illusion so convincing, the eyes follow you so eerily.

You can find more examples and explanations on the internet by searching for “Hollow Face Illusion”.

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