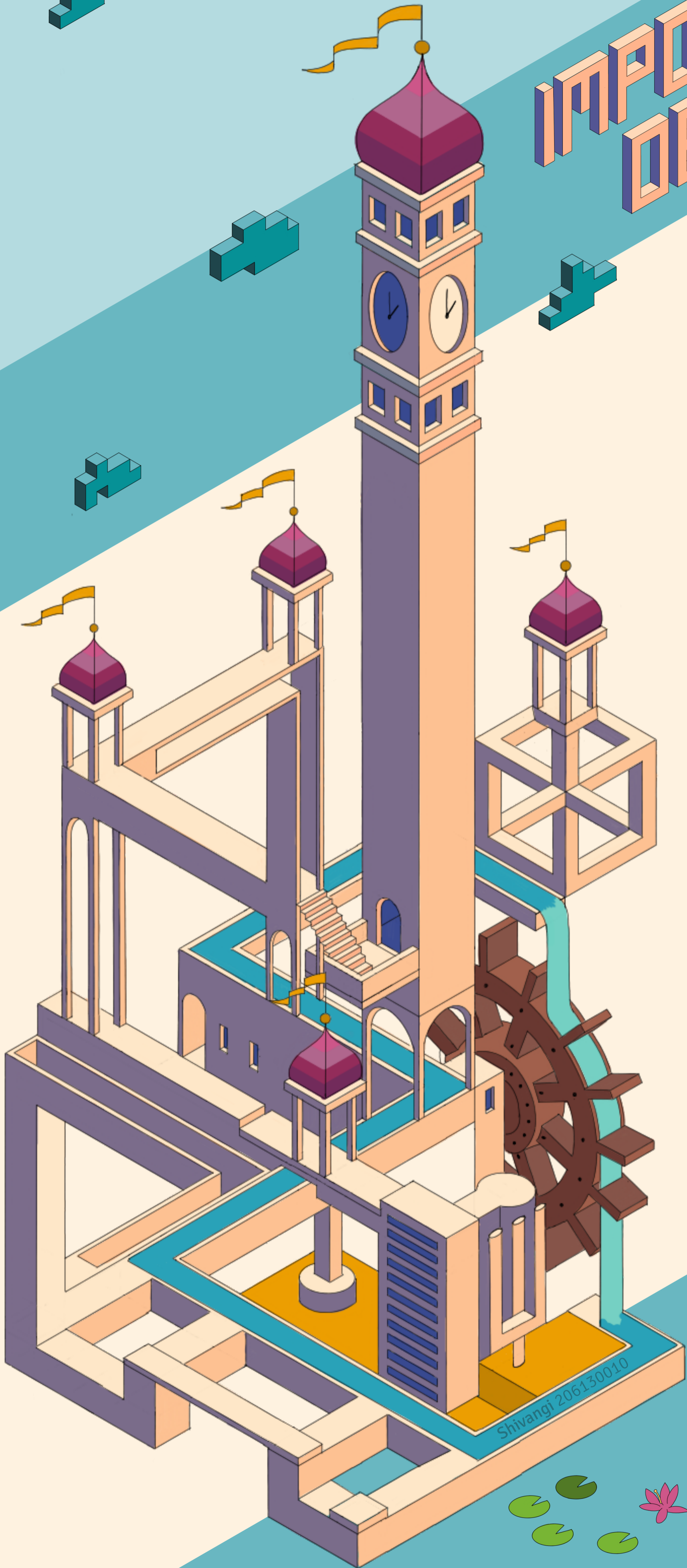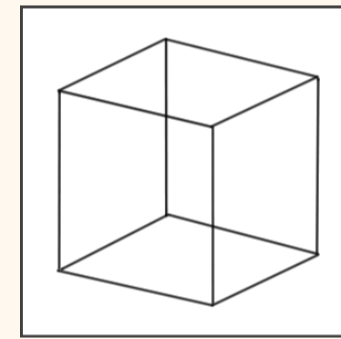# IMPOSSIBLE OBJECT

What is it?

- It is an optical illusion in which our eyes recognize a 2D figure as a projection of a 3D object.
- After consciously examining the geometry of the 2D projected image, it is easy to determine that it is can't exist as per Euclidean Geometry laws.
- But even after the impossibility becomes known, we have an impression of it being a 3D object as our brain is used to reconstructing an internal 3D world model from the flat retinal image.
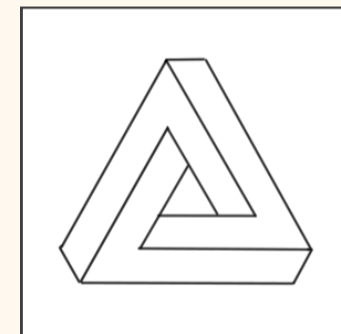
History

- Oscar Reutersvard (Father of Impossible figures) was the first to deliberately design many impossible objects. He drew the Penrose triangle (as broken up into cubes) in 1934, a few years before the Penroses.
- From the 1930s onwards, M.C. Escher produced many drawings featuring paradoxes of perspective gradually working towards the impossible object.
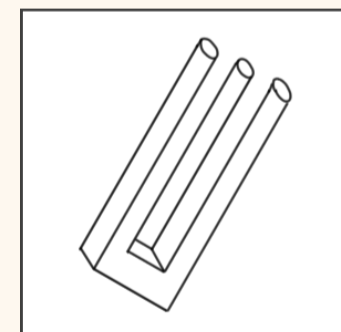
Elements Used in Graphic

Necker Cube
The mind perceives the wireframe as a 3D cube. The viewer can't judge which of the surface of the cube is at the front, therefore it is a blivet. The ambiguous cubic shape can spontaneously switch perspectives.
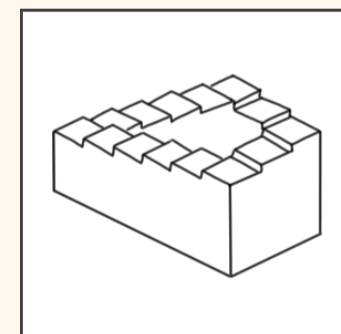
Penrose Triangle / Tribar
The solid object seems to be 3 straight beams of square cross-section which meet pairwise at right angles at the vertices of the triangle. This can't be achieved in a 3D object in ordinary Euclidean geometry.
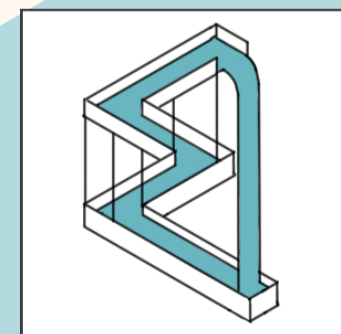
Devil's Fork / Trident
It seems to have 3 cylindrical prongs towards the top but it mysteriously becomes 2 as you notice the bottom. It happens as the projections of the prongs are not appropriate & one prong merges in the background.
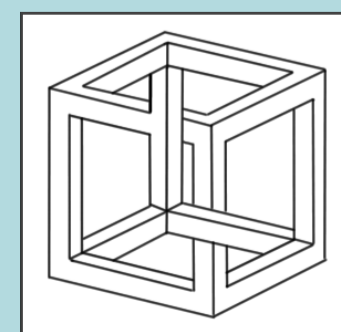
Penrose Stairs
A 2D depiction of a staircase where the stairs make 4 90-degree turns as they ascend or descend yet form a continuous loop. A person can climb or descend them forever and yet never get any higher or lower.

Escher Waterfall
It shows the perpetual motion of water where water from the base of the waterfall appears to run downhill along the water path before reaching the top of the waterfall. It uses the structure of two Penrose triangles.

Impossible Cube
It is a two-dimensional figure that superficially resembles a perspective drawing of a three-dimensional cube, with its features drawn inconsistently from the way they would appear in an actual cube.

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