

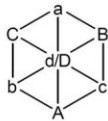
# Necker Cube

The Necker cube effect is experienced when an observer looks at a hexagon with opposite corners connected by lines that intersect at the centre. The observer's perception alternates between four interpretations: one in which the centre lies in the plane of the hexagon, and three in which it projects toward or away from the observer - forming three different pairs of opposing cube faces. These orientations are mutually exclusive and cannot be seen simultaneously.

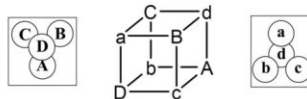
This perceptual effect embodies the symmetry inherent in Order 4.

Four relational objects—**a, A; b, B; c, C; d, D**—can be ordered in three ways where distinctions are drawn between the first three pairs (*a, A; b, B; c, C*), but only by sacrificing the distinction between *d* and *D*. Alternatively, one can draw a distinction between *d* and *D*, but then no distinctions are drawn between the other three pairs.

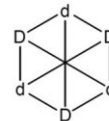
This reflects a trade-off in perception and symmetry: distinguishing some aspects necessarily erases others.



**ORDER 4**  
One distinction (that between *d* and *D*) is lost when four different objects are constrained to be ordered in rings.



**ORDER 4**  
Two interpenetrating enantiomers of a chiral tetrahedron:  
(*a, b, c* and *d*) and (*A, B, C, D*).



**ORDER 4**  
The lost distinction between *d* and *D* can only be recovered at the expense of losing the distinctions defining *a, A; B, b* and *c, C*.

## The Necker Cube Effect is Embodied in the Symmetry of Order 4.

**The three opposed pairs of faces represent the three pairs of ways of ordering four different relational objects - *a, A; b, B; c, C* and *d, D* - in a ring (the cube effect).  
A distinction between the relational objects *d* and *D* can only be drawn when no distinction is being drawn between *a, A; b, B; c, C* and *d, D* (the flat hexagon effect).**

It appears that our sense of 3D space - where we draw distinctions between *up/down*, *left/right*, and *front/back* - is inherently embodied in a **triplet state**. This offers an alternative interpretation of spatial depth, one that does not rely on Cartesian coordinates, but instead arises from the dynamic interplay of relational distinctions.