Transparency and structure from motion

Bistability in transparency and rigidity

1.1 Two transparent rotating squares

When you initially view the video above, **1.1 Two transparent rotating squares**, you will most likely see one transparent (darker) square surface in front of a (lighter) opaque square surface, together rotating about a single axis. This percept corresponds an interpretation of the front and back faces of a rotating cube viewed from above, and looks like **1.2 Two faces rotating about a single central axis**. However, if you look long enough at **1.1 Two transparent rotating squares**, eventually your perceptual interpretation will suddenly flip, and you will see the two surfaces apparently slipping and sliding over one another, where the lighter upper surface now appears transparent and in front, while the lower darker surface now appears opaque and in back. This percept looks like **1.3 Two faces rotating about two distinct axes**. It is as if your "visual brain" "knows" about the physics of rotation, coming up with the split axes interpretation even before you are cognitively aware that this is a second possible physical explanation for the rotation. [1]

1.2 Two faces rotating about a single central axis

1.3 Two faces rotating about two distinct axes

1. Daniel Kersten, Heinrich H Bülthoff, Bennett L Schwartz, and Kenneth J Kurtz. Interaction between transparency and structure from motion. *Neural Computation*, 44:573–589, 1992. doi:10.1162/neco.1992.4.4.573.