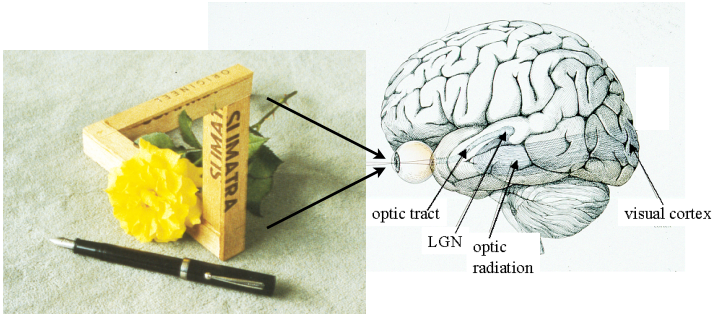
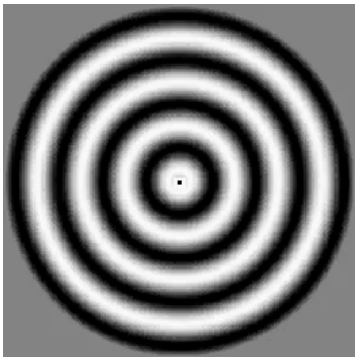
The "principles"

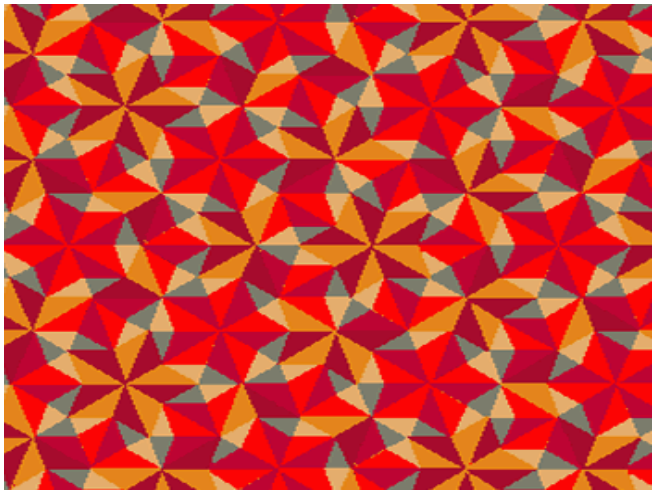
- Perception is an inference that has evolved/developed to match the statistics of the environment (Bayesian estimation with priors that embody statistics of environment).
- Functional specialization. Each brain area (defined on the basis of physiology, architecture, connections, topography) performs a different function.
- Computational theory. Canonical computation (linear sum, threshold or sigmoid nonlinearity, gain control, adaptation) cascaded across a pathway of visual cortical areas. Selectivity and invariance.

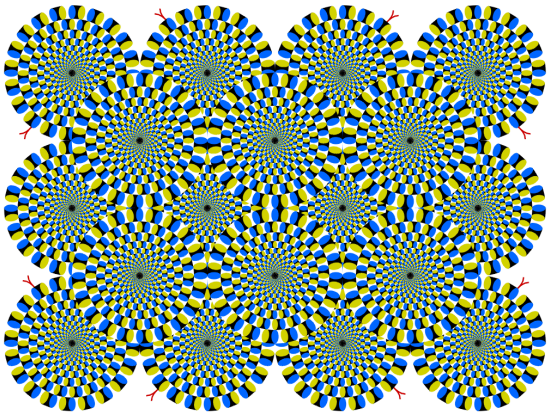
Vision is an unconscious inference



Visual inference: motion perception



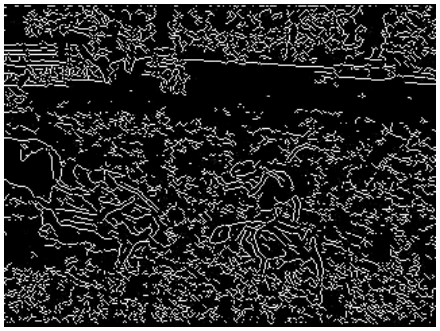




Visual motion perception… what is it good for?

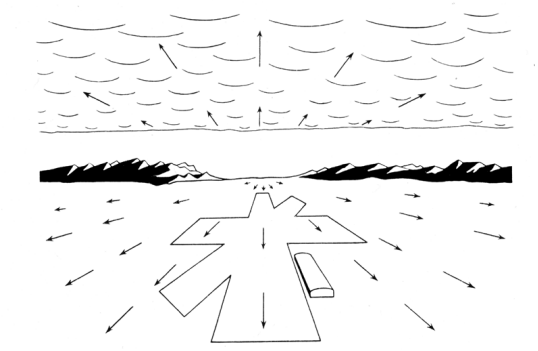
- Motion detection and segmentation: distinguishing moving objects from their background.
- Depth, navigation, and collision avoidance.
- Shape & recognition.

Motion segmentation

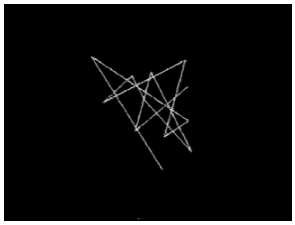


Depth and motion parallax

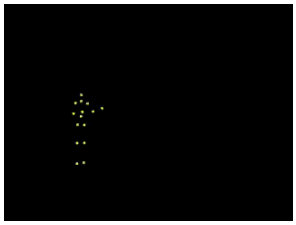
Optic flow



3D Shape from motion

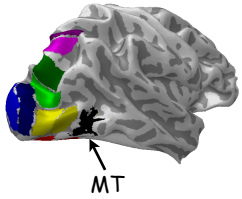


Recognition & biological motion



Two guiding principles

Functional specialization



Computational theory