Psy 606 (Graduate Seminar): **Perception of 3D shape**

Fall 2008

**Armory 102A**
**Wed:** 9-10am  
**Fri:** 9-10:30am


**Topics**

1. **Shape is special. Complexity of shape. Veridicality of shape perception** (pp. 1-8).

2. **“Taking into account” explanations. Shape constancy. Shape recognition. Shape discrimination** (pp. 8-27).
   - Thouless’s experiment with ellipses
   - Stavrianos’s experiment with rectangles

3. **Symmetry of 2D and 3D shapes. Invariants. Reconstruction.**

4. **Inverse problems. Regularization theory. Bayesian inference. The role of priors.**  
   - **Minimum Description Length** (Section 3.4, C12-C14).

5. **Gestalt Psychology** (Section 1.6).
   - Figure-ground organization
   - Simplicity principle (prior)

6. **Cognitive Revolution** (Sections 2.1-2.3).
   - Information Theory
   - Computers
c. Control Systems


7. Empiricism. Transactional Psychology. Learning (Sections 2.4-2.5).

8. Geometries, groups, invariants (Sections C1-C10).

9. Gibson’s direct perception (Section 3.3).

10. Marr’s paradigm. Surfaces (Sections 3.1-3.2).

11. Recovery of polyhedra (Section C11, Appendix D).

12. Depth cues vs. priors in shape recovery (Sections 4.1-4.2).

13. Uniqueness of shape (Sections 4.3.1-4.3.2).
14. **Viewpoint dependence** (Section 4.3.3).


15. **Shape priors** (Section 4.3.4, Chapter 5).