

PSYC 536H: Visual Cognition
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Perception, Recognition, and Attention

January 22 **Course Outline, Syllabus, Organization**

January 29 **Object Recognition I: Structural Description Theories**

Biederman, I. (1987). Recognition by components: A theory of human image understanding. *Psychological Review*, *94*, 115-147.

Biederman, I., & Gerhardstein, P.C. (1993). Recognizing depth-rotated objects: Evidence and conditions for three-dimensional viewpoint invariance. *Journal of Experimental Psychology: Human Perception & Performance*, *19*, 1162-1182.

Hummel & Stankiewicz

Saiki, J. & Hummel, J. E. Connectedness and the integration of parts with relations in shape perception. In revision for the. *Journal of Experimental Psychology: Human Perception and Performance*, 1998

Hoffman, D. D., & Singh, M. (1997). Parts of recognition. *Cognition*, *18*, 65-96.

Hummel, J.E. & Stankiewicz, B. J. (1996). An architecture for rapid, hierarchical structural description. In T. Inui & J. McClelland (Eds.), *Attention and Performance XVI: Information Integration in Perception and Communication* (pp. 93-121). Cambridge, MA: MIT Press

Hummel, J.E., & Stankiewicz, B. J. (1996). Categorical relations in shape perception. *Spatial Vision*, *10*, 201-236

February 5 **Object Recognition II: View Based Theories**

Tarr, M. J., & Pinker, S. (1989). Mental rotation and orientation-dependence in shape recognition. *Cognitive Psychology*, *21*, 233-282.

Bülthoff, H. H., Edelman, S. Y., & Tarr, M. J. (1995). How are three-dimensional objects represented in the brain? *Cerebral Cortex*, *5*(3), 247-260.

<http://www.cog.brown.edu/People.htm>

Tarr, M. J., & Bülthoff, H. H. (1995). Is human object recognition better described by geon structural descriptions or by multiple views? Comment on Biederman and Gerhardstein (1993). *Journal of Experimental Psychology: Human Perception and Performance*, *21*, 1494-1505.

<http://www.cog.brown.edu/People.htm>

Which theory is supported by physiology?

Perret, D., Oram, M.W., & Ashbridge, E. (1998). Evidence accumulation in cell populations responsive to faces: An account of generalization of recognition without mental transformations. *Cognition* *67*, 111-145

Logothetis, N. K., Pauls, J., & Poggio, T. (1995). Shape representation in the inferior temporal cortex of monkeys. *Current Biology*, *5*, 552-563.

February 12 **Are Faces Special? Behavioral and Imaging Experiments**

- Farah, M.J., Wilson, K.D., Drain, M., & Tanaka, J.N. (1998). What is "special" about face perception? *Psychological Review*, 105, 482-498.
- Gauthier, I., Anderson, A.W., Tarr, M.J., Skudlarski, P., & Gore, J.C. (1997). Levels of categorization in visual recognition studied with functional MRI. *Current Biology*, 7, 645-651.
(<http://WWW.PSY.VANDERBILT.EDU/faculty/gauthier/#REFS>)
- Gauthier, I., Behrmann, M., & Tarr, M.J. (1999). Can face recognition really be dissociated from object recognition? *Journal of Cognitive Neuroscience*, 11, 349-370. (<http://WWW.PSY.VANDERBILT.EDU/faculty/gauthier/#REFS>)
- Tarr, M.J., & Gauthier, I. (2000). FFA: A flexible fusiform area for subordinate level visual processing automatized by expertise. *Nature Neuroscience*, 3, 764-769. (<http://WWW.PSY.VANDERBILT.EDU/faculty/gauthier/#REFS>)
- Kanwisher, N. (2000). Domain specificity in face perception. *Nature Neuroscience*, 3, 759-763.
(<http://WWW.PSY.VANDERBILT.EDU/faculty/gauthier/#REFS>)
- Tarr, M.J. (in press). In M. A. Peterson and G. Rhodes (Eds.), *Analytic and holistic processes in the perception of faces, objects, and scenes*. JAI/Ablex. Visual object recognition: Can a single mechanism suffice? Read p 11, bottom - p. 18.

February 19 Task-Dependent Development of Features/Units

- Schyns, P. G., Goldstone, R L., & Thibaut, J.-P. (1998). The development of features in object concepts. *Behavioral and Brain Sciences*, 21, 1-17.
<http://cognitrn.psych.indiana.edu/rgoldsto/papers.html>
- Goldstone, R.L. (2000). Unitization during category learning. *Journal of Experimental Psychology, Human Perception and Performance*, 26, 86-112.
<http://cognitrn.psych.indiana.edu/rgoldsto/papers.html>
- Tanaka, K. (1996). Inferotemporal cortex and object vision. *Annual Review of Neuroscience*, 19, 109-139.

February 26 Object-Based Attention

- Behrmann, M., Zemel, R. S., & Mozer, M. C. (1998). Object-based attention and occlusion: Evidence from normal participants. *Journal of Experimental Psychology: Human Perception and Performance*, 24, 1011-1036.
- Duncan (1984)
- Baylis & Driver (1993)
- Davis & Driver
- Moore, C. M., & Yantis, S., & Vaughan, B. (1998). Object-based visual selection: Evidence from perceptual completion. *Psychological Science*, 9, 104-110.

March 5 Attentional Blink

- Raymond et al 1992
- Raymond et al 1995
- Shapiro, Driver, et al (1997) *Psychological Science*, 8, 95-100
- Shapiro & Terry (1998). In R. Wright (Ed.), *Visual attention*. Oxford University Press.

Vogel, Luck, & Shapiro (1998). *Journal of Experimental Psychology: Human Perception and Performance*, **24**, 1656-1674.
Ward, Duncan, & Shapiro (1996). *Cognitive Psychology*, **30**, 79-109.

March 12 **SPRING BREAK**

March 19 **Repetition Blindness**

Chun & Cavanagh
Fagot & Pashler
Kanwisher, Kim, & Wickens
Kanwisher, Yin, & Wol
Arnell & Jolicoeur

March 26: **Cognitive Neuroscience Meeting (No class)**

April 2 **Change Blindness**

Simons, D. J., & Levin, D. T. (1997). Change blindness. *Trends in Cognitive Sciences*, **1**, 261-267.
Fernandez-Duque, D., & Thornton, I. M. (2000). Change detection without awareness: Do explicit reports underestimate the representation of change in the visual system? *Visual Cognition*, **7**, 323-344.
Henderson, J. M., & Hollingworth, A. (in press). Eye Movements, Visual Memory and Scene Representation. In M. A. Peterson and G. Rhodes (Eds.), *Analytic and holistic processes in the perception of faces, objects, and scenes*. JAI/Ablex.
Hayhoe, M. (2000). Vision using routines: A functional account of vision. *Visual Cognition*, **7**, 43-64.
Rensink, R. (2000). The dynamic representation of scenes. *Visual Cognition*, **7**, 17-42.

April 9 **Memory Influences on Perception and Attention**

Chun, M.M., & Jiang, Y. (1998). Contextual cueing: Implicit learning of visual context guides spatial attention. *Cognitive Psychology*, **36**, 28-71.
Chun, M.M., & Jiang, Y. (1999). Top-down attentional guidance based on implicit learning of visual covariation. *Psychological Science*, **10**, 360-365.
Johnston, W.A., Hawley, K.J., Plew, S.H., Elliot, J.M. & DeWitt, M.J. (1990). Attention capture by novel stimuli. *Journal of Experimental Psychology: General*, **119**, 397-411.
Peterson, M.A.,
Peterson, M.A., & Kim, J.H.
Vecera & Farah

April 16 **Pre-attentive and Post-attentive Vision**

- Moore, C. M., & Brown, L. E. (in press). Preconstancy information can influence visual search: The case of lightness constancy. *Journal of Experimental Psychology: Human Perception and Performance*.
- Nakayama and colleagues
- Wolfe & Horowitz
- Wolfe, J. M. (1999). Inattentional Amnesia. In V. Coltheart (Ed.), *Fleeting Memories*, pp. 71-94. **Read pages 77-87.**
- Wolfe, J.M., Klempe, N., & Dahlen, K.(2000). Post Attentive vision. *Journal of Experimental Psychology: Human Perception and Performance*,26,693-716. (<http://search.bwh.harvard.edu/post.htm>)
- Wolfe, J M (1998) What do 1,000,000 trials tell us about visual search? *Psychological Science*, 9, 33-39
- Horowitz, T. S., & Wolfe, J. M. (1998). Visual search has no memory. *Nature*, 394(Aug 6), 575-577.

April 23 Inhibition of Return

Klein
Gibson & Egeth 1994

April 30 Reentrant Visual Processes:

- DiLollo, V., Enns, J.T., & Rensink, R.A. (2000). Competition for consciousness among visual events: The psychophysics of reentrant processes. *Journal of Experimental Psychology: General*, 129, 481-507.
- Sillito, A.M., Jones, H.E., Gerstein, G.L., & West, D.C. (1994). Feature-linked synchronization of thalamic relay cell firing induced by feedback from the visual cortex. *Nature*, 369, 479-482.
- Tsal, Meiran & Lamy (1995). Visual Cognition
- Enns, Brehaut, & Shore (1999). *J of Gen. Psych*, 126, 355-372.
- Duncan et al *Nature*, 369, 313-315.

