Announcements

- a3 part 2 due tomorrow, Feb. 22, 11:59pm
- I still have some of your quizzes
- Homework questions?
Quick Recap

• Last Week
  - Finished up backprop and neural networks
  - Color: neurophysiology, psychophysics, etc.

• This Week
  - Categories & concepts
  - Linguistics guest speakers

• Coming up
  - Image Schemas, Force-Dynamics
Categories

• What constitutes a basic-level category? Is red a basic-level category? Is maroon?

• Does it vary from person to person?

• What is a superordinate category? A subordinate category?
Three ways of examining the categories we form:
- relations between categories (e.g. basic-level category)
- internal category structure (e.g. radial category)
- instances of category members (e.g. prototypes)
Basic-Level Category

What constitutes a basic-level category? Definition:

- **Perception:**
  - similar overall perceived shape
  - single mental image
  - (gestalt perception)
  - fast identification

- **Function:**
  - general motor program

- **Communication:**
  - shortest
  - most commonly used
  - contextually neutral
  - first to be learned by children
  - first to enter the lexicon

- **Knowledge Organization:**
  - most attributes of category members stored at this level

Red? yes  Maroon? arguable (expertise)
Category Structure

- Classical Category:
  - necessary and sufficient conditions

- Radial Category:
  - a central member branching out to less-central and non-central cases
  - degrees of membership, with extendable boundary

- Family Resemblance:
  - every family member looks like some other family member(s)
  - there is no one property common across all members (e.g. polysemy)

- Prototype-Based Category
- Essentially-Contested Category (Gallie, 1956) (e.g. democracy)
- Ad-hoc Category (e.g. things you can fit inside a shopping bag)
Prototype

- Cognitive reference point
  - standards of comparison
- Social stereotypes
  - snap judgments
  - defines cultural expectations
  - challengeable
- Typical case prototypes
  - default expectation
  - often used unconsciously in reasoning
- Ideal case / Nightmare case
  - e.g. ideal vacation
  - can be abstract
  - may be neither typical nor stereotypical
- Paragons / Anti-paragons
  - an individual member that exhibits the ideal
- Salient examples
  - e.g. 9/11 - terrorism act
- Generators
  - central member + rules
  - e.g. natural number = single-digit numbers + arithmetic
Mother

- The birth model
  The person who gives birth is the *mother*

- The genetic model
  The female who contributes the genetic material is the *mother*

- The nurturance model
  The female adult who nurtures and raises a child is the *mother* of the child

- The marital model
  The wife of the father is the *mother*

- The genealogical model
  The closest female ancestor is the *mother*

(WFDT Ch.4, p.74, p.83)
Radial Structure of Mother

The radial structure of this category is defined with respect to the different models:

- Biological mother
- Surrogate mother
- Unwed mother
- Central Case
- Genetic mother
- Stepmother
- Adoptive mother
- Birth mother
- Foster mother
- Natural mother

The radial structure of this category is defined with respect to the different models.
Marriage

- What is a marriage?
- What are the frames (or models) that go into defining a marriage?
- What are prototypes of marriage?
- What metaphors do we use to talk about marriages?
- Why is this a contested concept right now?
Language and Thought

- We know thought (our cognitive processes) constrains the way we learn and use language.
- Does language also influence thought?
- Benjamin Whorf argues yes.
- Psycholinguistics experiments have shown that linguistics categories influence thinking even in non-linguistics tasks.
Image schemas

- What is a schema?
  - a pattern capturing structure in the world

- What is an image schema?
  - a schema about interaction with the world

- Can you name some?
  - Containment
  - Source-Path-Goal
  - Part-whole
  - Near-far
Image schemas

- Think of image schemas as the “basic categories” of interaction with world
- Image schemas have basis in interaction with world and with neural structures
  - Of course, neural structures should capture regularities in interaction with world
  - Not linked to a specific neural area
  - Instead, linked to a neural CIRCUIT
English

ON

AROUND

OVER

ON

IN

Bowerman & Pederson
Dutch

Bowerman & Pederson
Lakoff central concepts

- What is an effector?
- What do people mean by neural encoding?
- What are motor neurons?
- What are sensory neurons?
- What are mirror neurons?
- What does it mean that executing schemas are not representational and not symbolic?
- How are metaphors maps?
- What is aspect, in the context of action?