BECOMING A SOCIAL THINKER:  
How infants learn social skills

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but first…

 why study development?
reasons to study development

- important: development, disability, treatment, education
- to understand mature traits, know how they emerged
  - complex traits (ex: social skill) don’t come out mature: emerge by *interactive experience* (history ↔ biology!)
- hardest problem in social or biological sciences...

how does brain develop to modulate social behaviors?

After 11 weeks, the expanding cerebral hemispheres have overgrown the diencephalon. At the metencephalon, cortical formation and expansion produce the cerebellum, which overlies the nuclei and tracts of the pons.
what social *routines* and *knowledge* did you learn in infancy/childhood?

.HashSet examples?
HashSet when do we see social response? enjoyment? adaptation?

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two social skill “complexes”

1. shared attention: roots of teaching and learning
   - what is it?
   - where does it come from?
2. learning to share meaning (in language):
   - what a word means…
how attention sharing (AS) emerges

- emerges between 9 and 18 months...
  - product AND engine of learning
- first signs: Do I see what you see?
- how AS emerges
- special human social skill?

gaze following at 12 months:
“do I see what you see?”

- why important?
  - use another person’s mind to infer what’s important in surroundings
  - SA limits confusion about reference & meaning
Modeling the Emergence of Shared Attention (http://mesa.ucsd.edu/)

- do [early abilities] + [structured environment] => AS skills?
  - abilities:
    - perception (gaze-shifting)
    - emotion (prefer social interaction)
    - learning: (maximize visual rewards)
  - environment: predictable caregiver actions

Simulations to test theories of emergence of shared attention

- Simulations on multiple platforms:
  - ANN, virtual environment, robotic head
Merv points…

(photo by David Leavens)

Is it a special human social skill?
→ No, but how we use it is!

how AS supports further social learning

- imitation; action-skill learning (e.g., tool use)
- word learning; knowing “what you mean”
imitation: using social info to learn skilled actions

- 1-year-old infants imitate goal-directed actions:
  - 14 months: imitate specific intended action
  - 18 months: imitate will complete “frustrated” action
- species-specialized skills (not “innate!”)
- require attention-directing & attention-following
  - teaching + imitation = CULTURAL LEARNING!

“what do you mean?”
problem of word learning

- why are words hard?
- function of AS in word learning?
- using language to learn language: bootstrapping word meanings
using AS to infer word meanings

- when adult says novel word, how could infant infer meaning?
- Baldwin: 18-month-olds* monitor adults' attention; infer what they are referring to
- Tomasello & Barton: Toddlers map verbs onto intended actions, not accidental ones

Using language to learn language: semantic bootstrapping

- Semantic cues provide critical information about word meanings:
  - "snoxen!"
  - "...the snoxen"
  - “The dog chased the scared snoxen”
  - but inherently variable and unpredictable…
  - how do children deal with this?
Flexibly using semantic cues to learn word meanings...

"...is a tulla"  "...is made of snorb"

"...has a framm"

Current questions about the developmental problem of induction

1. useful sources of information in infant’s world?
   - how do infants learn to predict these?
2. must learn:
   - kinds of regularities infants notice;
   - relation to physical/neural activity & social experience;
   - neural & social mechanisms that support this
getting involved

✔ research in Cognitive Development lab
  - http://www.cogsci.ucsd.edu/~deak/cdlab/
✔ COGS 160 (Deák)
  - involvement w/ research (3 quarters)
  - permission only, 3.3+ GPA, upper-div courses, desire to learn about research
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