Lecture 6 Mimesis

Let us begin by looking at the variety of types and functions of Imitation

Imitation - A hominid specialization; Some would call humans *"Homo imitans"* (e.g. *Meltzoff 1988*)
- But MANY species practice imitation

TYPES
- Built in - Structural: eyespots, breasts; "Contagion": chickens pecking & babies crying, involuntary
- Stimulus Enhancement – Activity by Model draws attention of Observer to context/object,
  - Obs then *appears* to mimic, engaging in species-typical behavior &/or learning on its own
- Emulation – Observer mimics outcome ("goal"), rather than means of attaining it: Common in NHPs
- Delayed Imitation – Behavior duplication performed in absence of the model
  - In NHPs, only after behavior practiced in presence; In Humans, can appear first in absence
- "True" Imitation: Duplication shows high fidelity and novelty (i.e. immed. mimicry of new behavior)
  - Also involves attending to & copying **means** (not just outcome) that other uses to do X
  - e.g. Child copies exact odd moves (e.g. turn on switch with elbow) (Carpenter et al 1998; Gergely et al 2002)
    - Unless see Model's state (e.g. hands full, accident) not afford normal action > emulate instead
  - So, slavishly copy, default to "presumption of utility", even if do not immediately know function
- NOTE: Humans do ALL of the above
  - Plus, humans show **VOCAL imitation,** of one another and of environmental sounds
    - Common in some birds, but rare in mammals, including NHPs (except dolphins)

FUNCTIONS
- Co-action –Eat when group eats, flee when group flees, advantages for food finding, predator avoidance
- Promotes a **prosocial** attitude in humans ("The sincerest form of flattery")
  - After being imitated, humans are nicer, even to third parties (*von Baaren et al 2004; Carpenter et al 2013*)
- Learning – By engaging in observed behavior, can learn affordances, accomplish new ends
- Conventionalization of behavior
  - Develop group-specific traditions, passed on across generations (including in some nonhumans)
  - Tends to establish a conformist stability (Perhaps helps account for stasis of Acheulian tools?)
- Communication – e.g. Iconic gesture, Pantomime, including vocal – more below

Entrainment = Synchronize with and duplicate (vocal, haptic, body, etc) output of others
- Common in many animals ("Co-action", above) but more elaborate, flexible in humans
- A bonding behavior, universally observed in humans
  - **Sing** especially in unison, same or complementary (Note some NHPs "sing", but limited)
  - **Dance** to music, drumming; Done socially, as ritual, as entertainment, etc.
- We exhibit some cognitive advantages from entrainment
  - e.g. Humans find it easier to maintain a rhythm if entrained to other- vs. self-generated
  - e.g. Humans find it easier to remember linguistic code if done in "sing-song"
    - i.e. Rhythmic, rhyming, collaboratively-learned (e.g. Nursery rhymes are mnemonic!)
- Collaboration: Vocal rituals used to coordinate breathing & **joint effort** ("1,2,3 go!" "Heave-ho!")
  - Consider BREATH CONTROL
  - Also poss interaction between vocal/haptic rhythms and learning tool construction?!

Gesture
- Seen in Nonhumans, but more frequent and more flexible in Humans
  - Typically accompanies, supports speech content, but can also communicate much w/out speech
- Types in contemporary humans
  - **Emphatic** - typically large, rhythmic, non-specific movements that add emphasis
    - Probably a function of generalized arousal & link between hands & mouth
  - **Indexical** - For directing attention; Includes **Pointing**; Not seen in NHPs (See Lecture 9)
  - **Iconic** - Gesture is physically congruent with what it represents, its "referent"
    - Includes imitations of own and other's actions, including "handling" of absent objects
    - Can include changes of scale, mapping to various body parts (e.g. fingers do the walking)
      - These could pay off in MANY social circumstances (See more below)
  - **Conventional -** Culturally-agreed meaning, may/may not be based on original iconic relationship
    - A historic (vs. evolutionary) development; Signals become increasingly arbitrary
- How used, includes:
  - **Environmentally coupled** - Show or otherwise incorporate objects, especially cognitive artifacts.
  - **Staging a frame** - Establish a temporarily meaningful space, to index, use spatial metaphors, etc
    - i.e. Create a shared, invisible reality. (Does this cognitively require symbolic speech??)

- While Gesture is older than speech, did a formal "Sign Language" precede spoken language???
  - PRO: Emerging structure of narrative (see below) may have standardized patterns of use
  - CON: Hands often otherwise busy when people gathered (carry, cook, eat, make tools, etc.)

Mimesis – Using Imitation to Communicate

See Donald (1993) reading

Pantomime + Vocal / Theater "Act As If" = a type of simulated reality, performed for others
  - Universal, practiced and understood around the world; Brain areas closely linked w/speech
  - Contemporary humans often "act out" voices, attitudes, actions of others as tell stories
- **Iconic** relationship to referent, highlights info for observers re even absent entities, actions, events
- Requires **combinatorics** – organizing bits of experience into new, communicative sequences
- Requires **self control** – e.g. to produce emotions not currently felt, acts not currently efficacious
- Acting "**as if**"; Involves conceptual "counterfactuals", multiple realities, im/possible worlds
- Overall, requires tolerance of the unreal, co-existence of multiple realities (vs. normal rejection of violations)
  - e.g. See also *Bateson (1972); Leslie (1987); Perner (1988); Gomez (2008)*

Adaptive Functions of Mimesis

- Mimesis ("Act as if") provides creative & elaborate responses to a variety of hominid challenges

- Deception

- Many mechanisms for deception across phyla (e.g. structural, involuntary, learned)
- w/Mimesis, act in a way that is consistent with a reality that you know is not the case
  - Convey info, attitude etc. that is more conducive (than the truth) to a desired outcome
  - Can exploit ignorance of others (e.g. if they were absent from original event) – See Lec 9
- Deception can select for better counter-deception, which selects for better deception, etc. etc.
- May include evolution of "Self Deception" to reduce ambiguity of signals? (*von Hipple & Trivers 2011*)

- Pretense, seen in all human children, seldom in NHPs

- Often involves Novice imitating (even absent) Expert, practice of observed cultural activities
- Often collaborative, with specific roles w/characteristic behaviors, relationships
- Can also involve innovation, experimentation, in relatively safe context of play
- Can involve "transformation" of objects (e.g. pretend that banana is telephone) *(see Leslie 1987)*

- Teaching

- Many species can learn from observing, imitating, but teaching is rare in nonhumans
- In humans, **teachers imitate**! (Nonhumans: *Do as you do*. Humans: *Do as I do!*)
  - i.e. Expert uses imitation to demonstrate, highlight errors & corrections, etc.
- More to come! (See Lecture 9)

- Narrative

- Life story, gossip (e.g. around the fire, or at tool-making, food-processing areas)
  - Can be used to **inform** ignorant others (not present at event) e.g. re prey, food availability
  - Can to some extent be accomplished without speech
- Links to **Episodic Memory** = egocentric, sequential, affect-rich, often goal-oriented
  - Combinatorics enable generating fictional stories as well as re-enactments of events
  - Includes parables, myths, that **embody** complex, abstract concepts at **human-scale**
- Note that narrative constraints may have prefigured Syntax
  - **Plot** constraints map to syntactic universals (Parse who did what, where, with whom, when)
  - In time, narrative structure could have helped select for grammatical organization of speech
- Also supports emergence of **Explanation** – Only humans ask (and try to answer) *Why?*
  - i.e. Integrate capacities for narrative & attribution of motive >> explain behavior, events
    - e.g. Eventually develop parables & myths, religious accounts to explain mysteries of world
- Just how much of above is possible with iconics vs. arbitrary symbols???
  - At least established a cognitive substrate that evolution could further operate on >> speech