Evolved Cognitive Mechanisms

Core Knowledge
Spelke, E. S. & Kinzler, K. D. (2007)

- 2 views in cognitive science
  - human mind = a flexible & adaptable mechanism for discovering regularities in experience
  - human mind = a collection of specialized mechanisms, each shaped by evolution for a specific purpose

- 4 core knowledge systems
  - object representation (spatio-temporal principles of cohesion, continuity & contact)
  - agents & their actions (goal directedness, efficiency, contingency, reciprocity, gaze direction are signatures of agent representations; mirror neurons, mirroring behavior)
  - core number system (3 competing sets of principles have been proposed to govern it)
    - they're imprecise, with imprecision growing with increasing cardinal value; “scalar variability”
    - they're abstract, applying to multiple sensory modalities (assigned to objects, sounds, sequences of actions)
    - they can be compared & combined by adding, subtracting
  - geometry of the environment (distance, angle & relations among extended surfaces)
  - potential 5th system: identifying & reasoning about potential social partners & social group members (predisposed to categorizing, in/out groups, prefer same-language speakers)

- These 4 systems are susceptible to errors and open to change

Folk Knowledge and Academic Learning

- evolved abilities → biologically Primary Abilities
  - Motivation to Control
    - be it over relationships, agents, resources; hypothesis: it’s an evolved disposition in response to selection pressures
    - Mental simulation of a perfect world wherein one controls everything; possible b/c of our ability to abstractly represent our world & modify this representation with new information (e.g., after evaluating the dynamics of a social interaction); limited by working memory & driven by executive control, associated with prefrontal cortex
  - Folk psychology- the affective, cognitive, psychological & behavioral systems that are common to all people & enable then to negotiate social interactions & relationships (these cognitive functions should process & manipulate/categorize the forms of social information that have covaried with survival & reproduction during human evolution; coalesce with underlying modular systems)
    - Self: self awareness, self-schema (positive/acentuated & negative /discounted traits, episodic memories, self-efficacy, etc. in LTM. regulates goal-directed behavior)
    - Person: monitor dynamic interactions,