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The symmetry contingency bias: A uniquely human cognitive bias that makes language-learning possible

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The symmetry contingency bias: a uniquely human cognitive bias that makes language-learning possible

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Language is extremely complex entity, which is founded on many perceptual and cognitive functions. In this presentation, I highlight on a particular cognitive bias, by which the symmetrical relation between a word form and its referents—cannot be achieved. In using language, we take it for granted that the word sound “rabbit” refers to a category of rabbits, and that these category members are called “rabbit.” However, assuming the symmetrical contingency relation is logically false (“all dogs are animals” is true but “all animals are dogs is false”). Importantly, the animal cognition literature has long shown that non-human animals do not assume symmetrical relations between contingencies. Human children must have this assumption (or a bias) by the time they acquire word meanings, as they cannot acquire them without it. I address the origin of this bias, by an experiment comparing 8-month-old human infants and adult chimpanzees (Imai et al., 2021).

The contingency symmetry inference is a rudimentary form of abductive inference. I will explore how the seeds of abductive inference in the form of symmetry bias develop into more sophisticated forms of abductive inference, including inference of verb meanings, which integrates multiple sources of knowledge children possess and information residing in the outside world. I will also discuss how the symmetry bias and the following abductive inference contribute rapid and efficient knowledge expansion in general.