COGNITIVE SEMANTICS
&
QUANTITIES

Jakub Szymanik

European Research Council

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THE BIG QUESTION

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- Success story in the last 50 years (language technology)
- E.g. explaining correctness (syntax not enough)

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Partee & ter Meulen'90, Kamp & Reyle'93, Portner'05, Winter'16, Dekker & Aloni'16

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There are **limitations** to this purely theoretical approach

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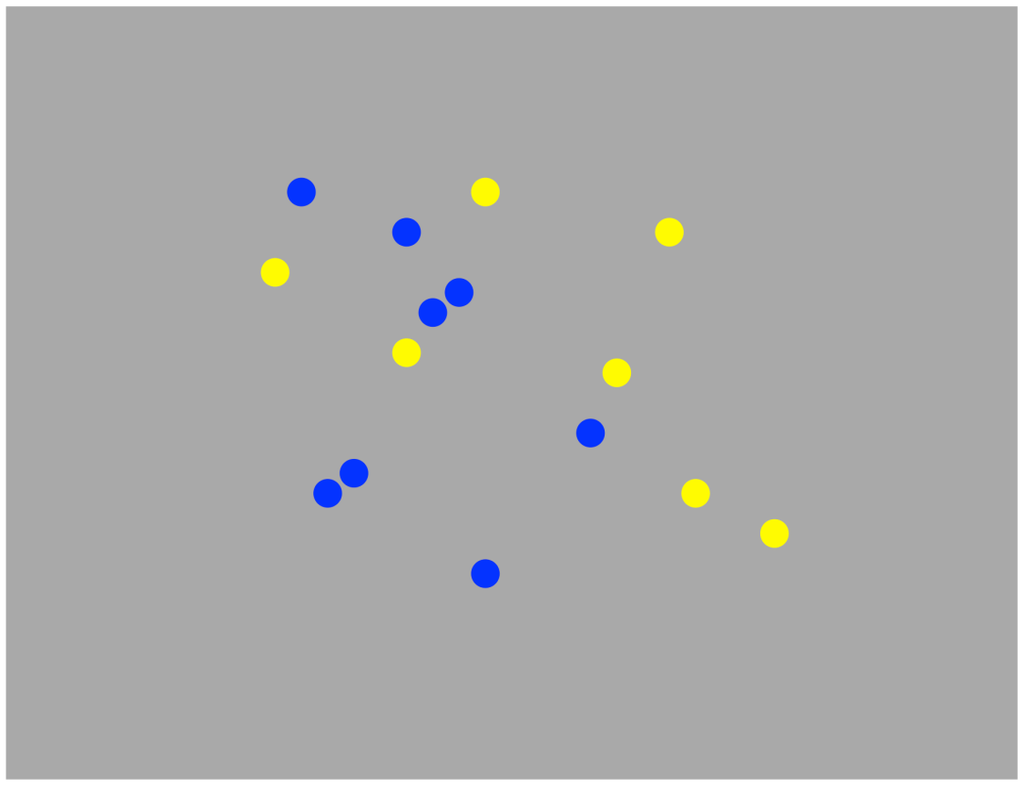

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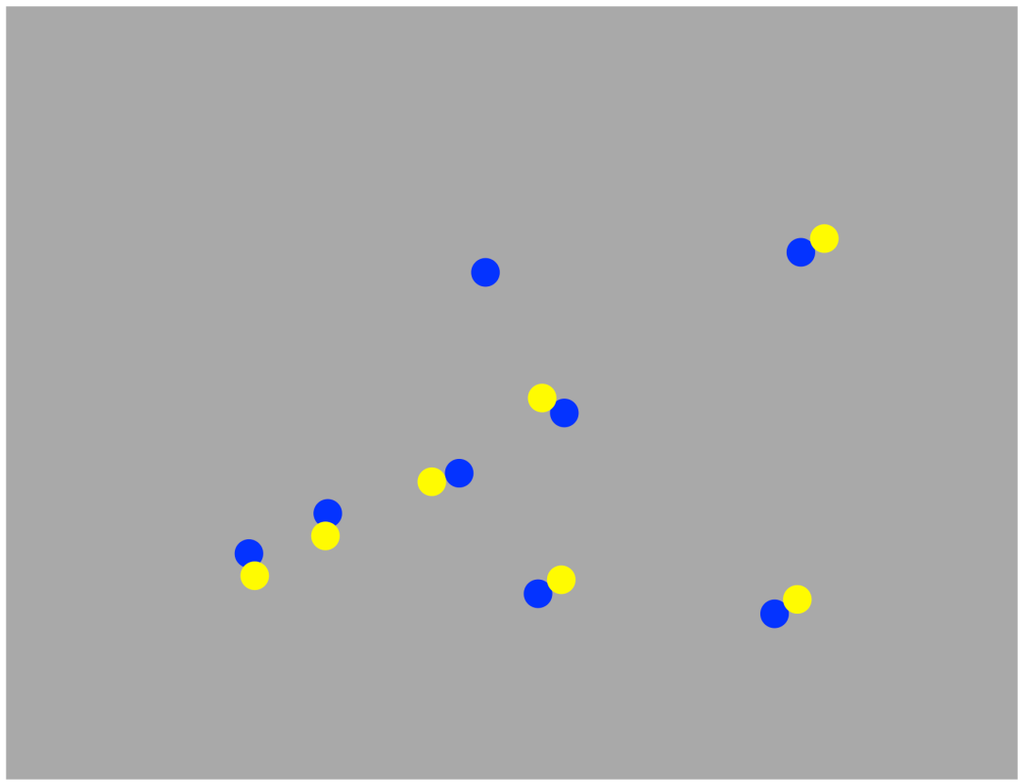

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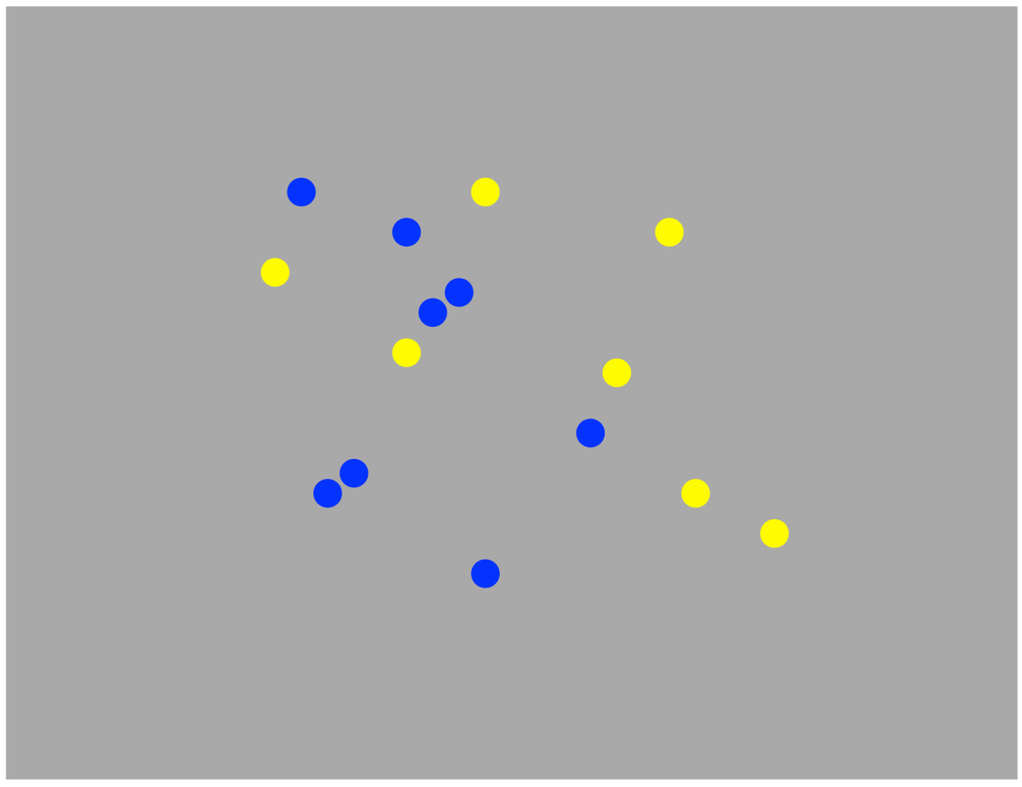

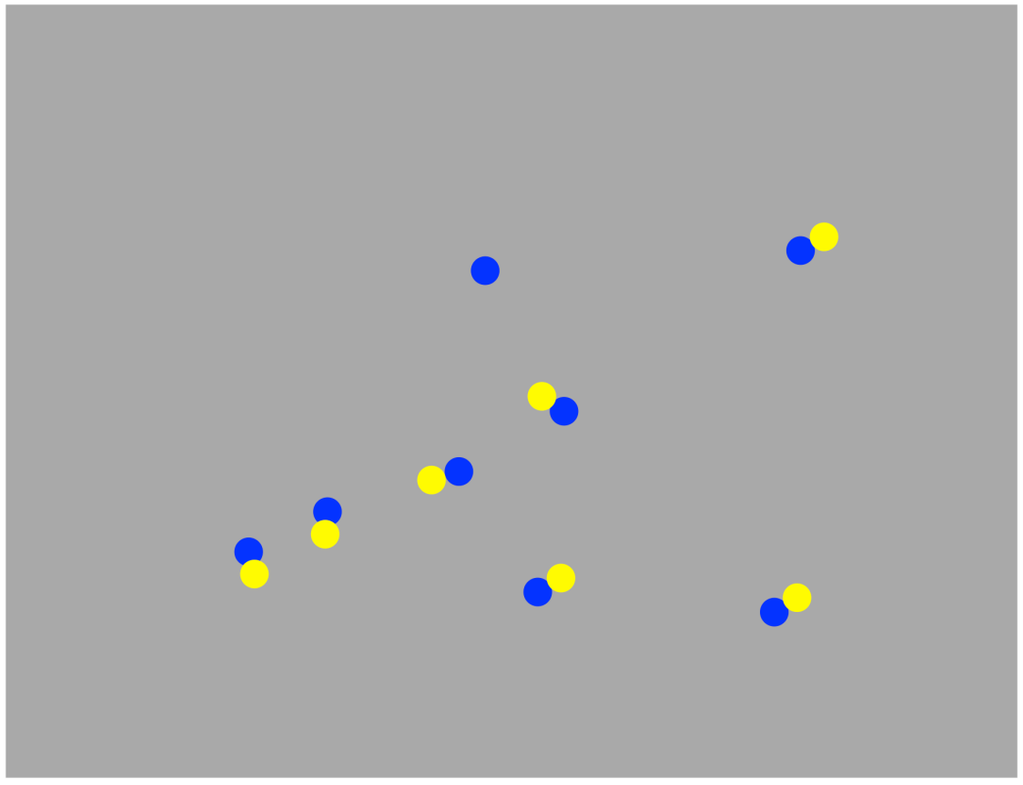

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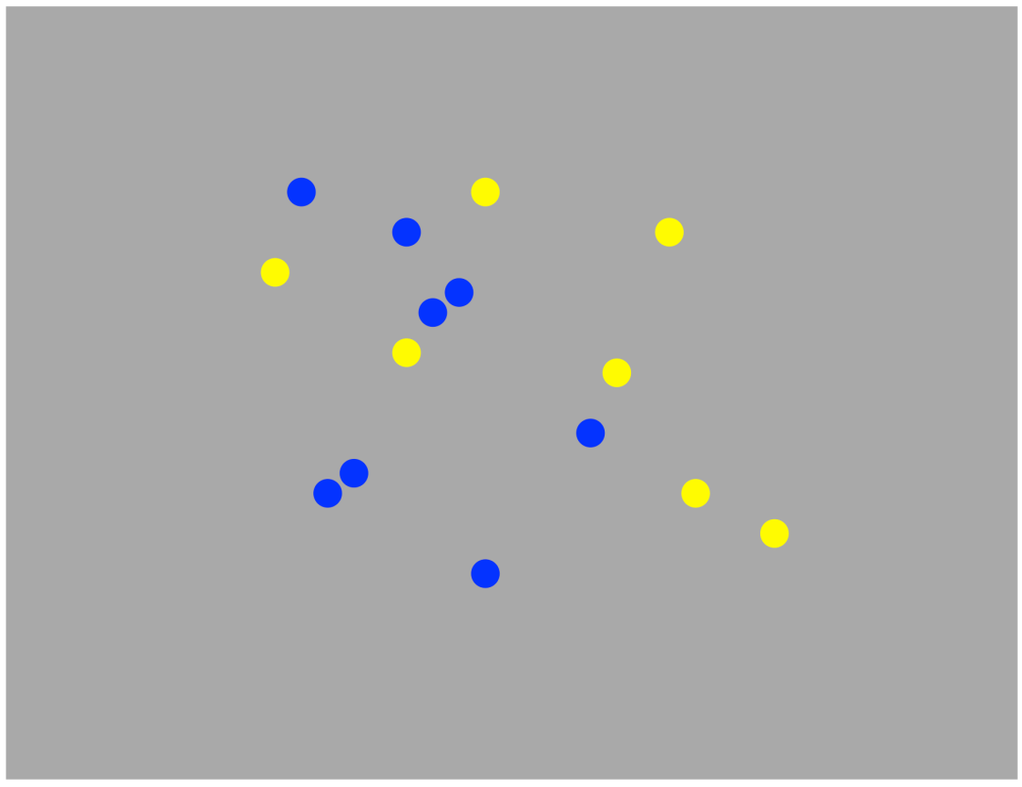

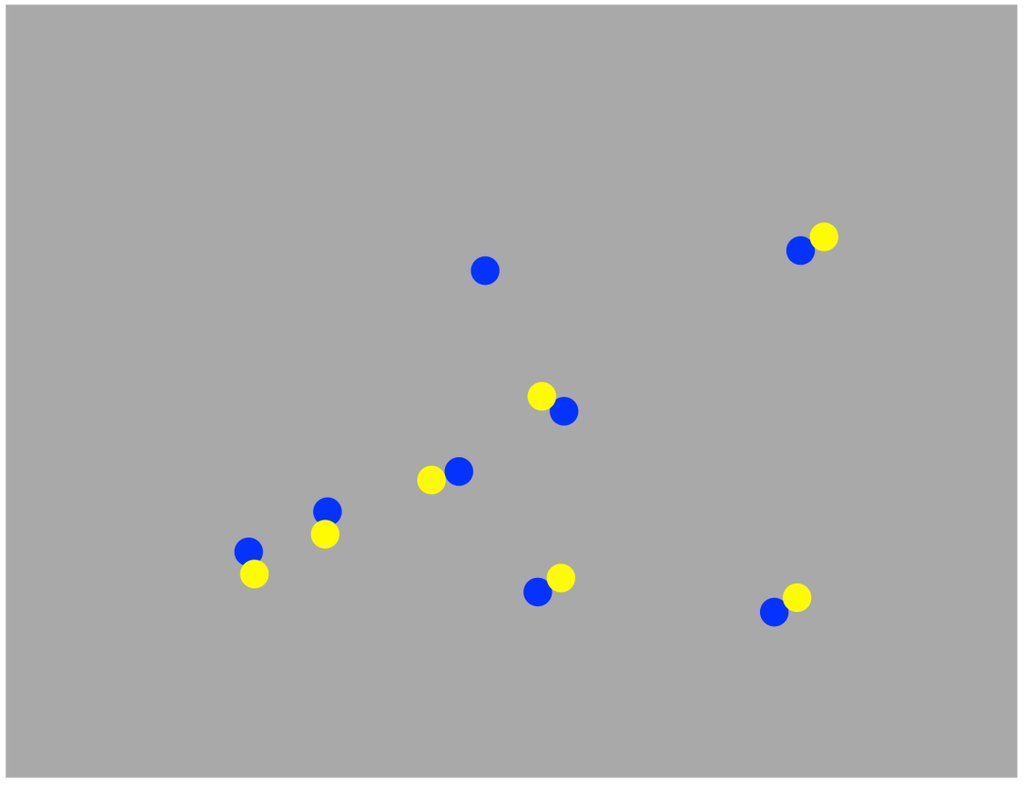

We need a richer notion of meaning!

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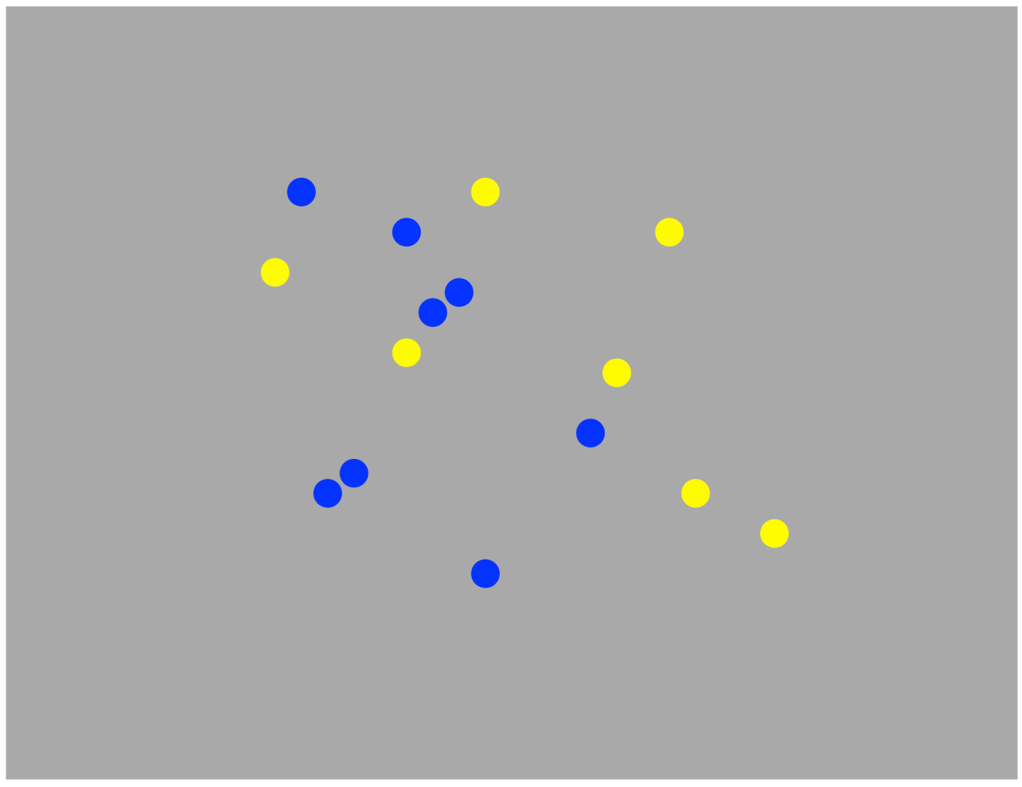
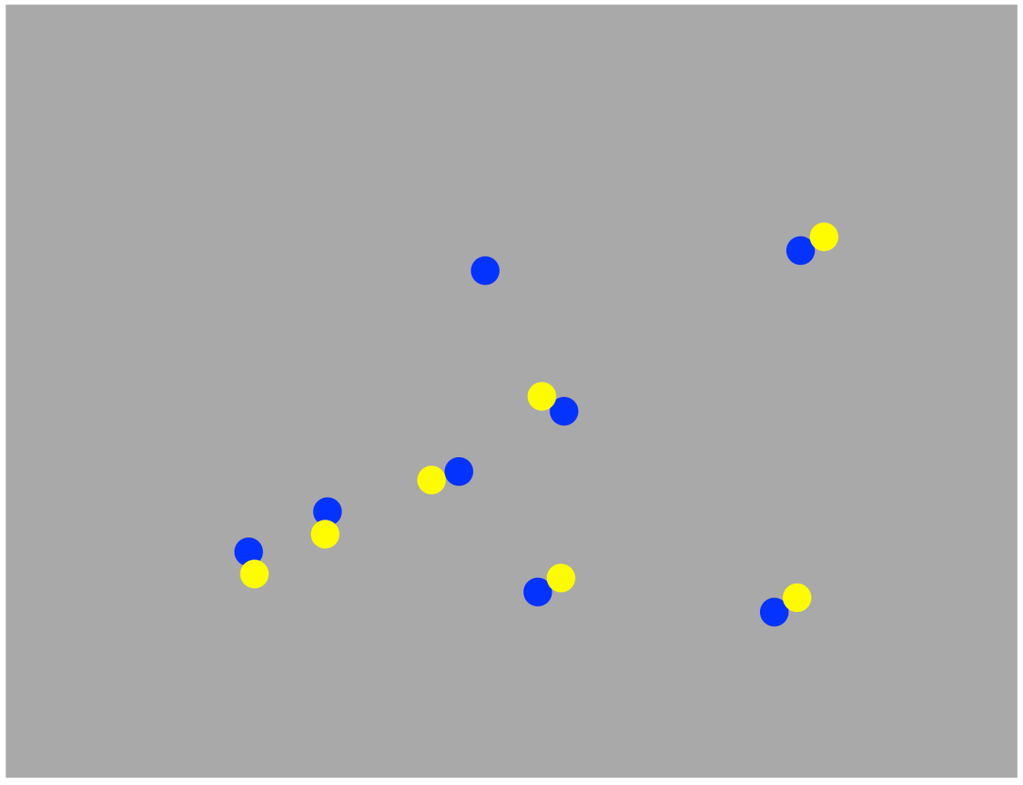




We need a richer notion of meaning!

more than half vs. most; monotonicity; more than 3 vs. at most 4,…

ONE OPPORTUNITY

- Converging efforts of semantics & psychology

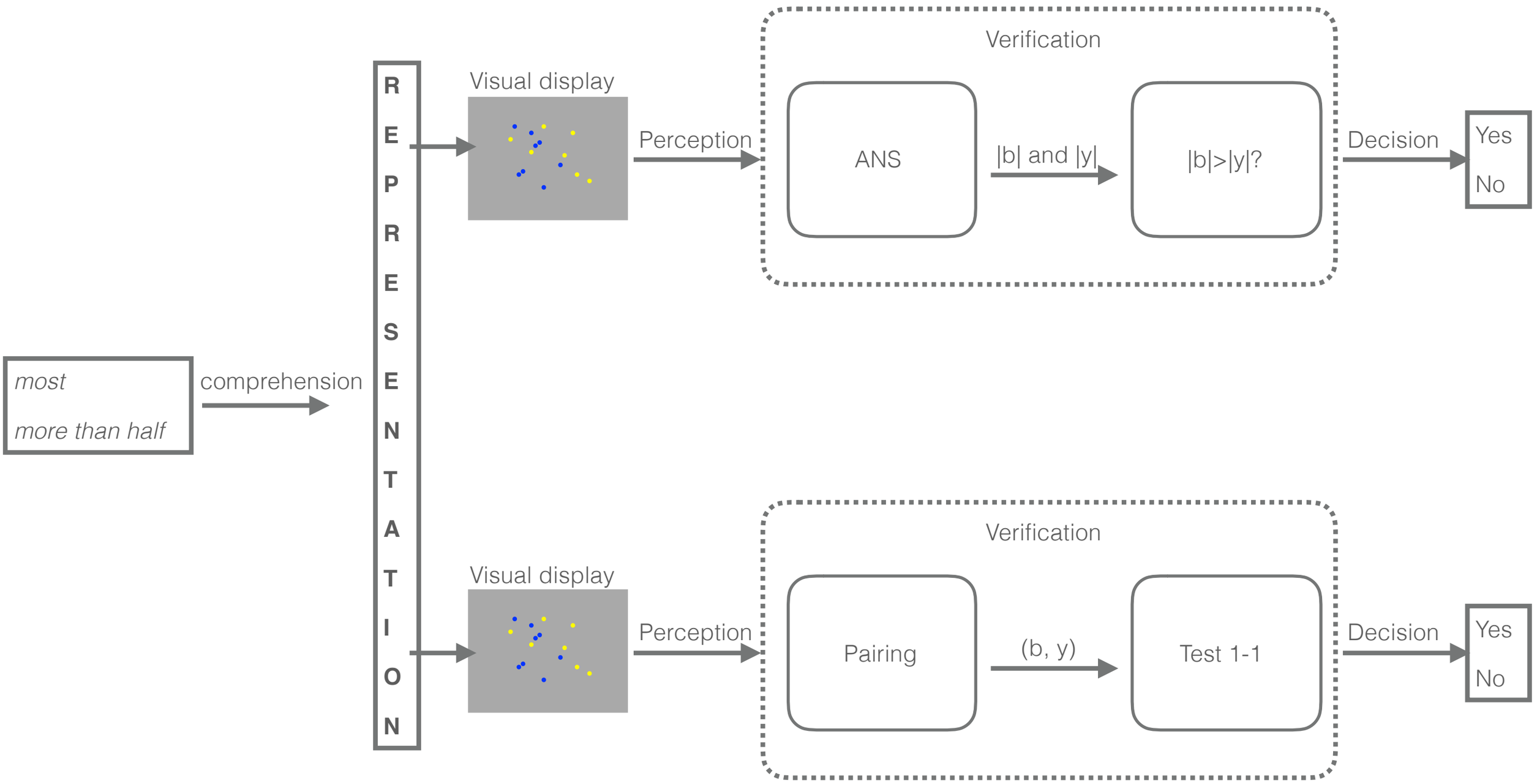
  A. Computational theory of quantifiers

  B. Cognitive theory of quantity representations

Dehaene'99, Szymanik'16

EXAMPLE: VERIFICATION

Meaning = computational procedure constrained by cognition



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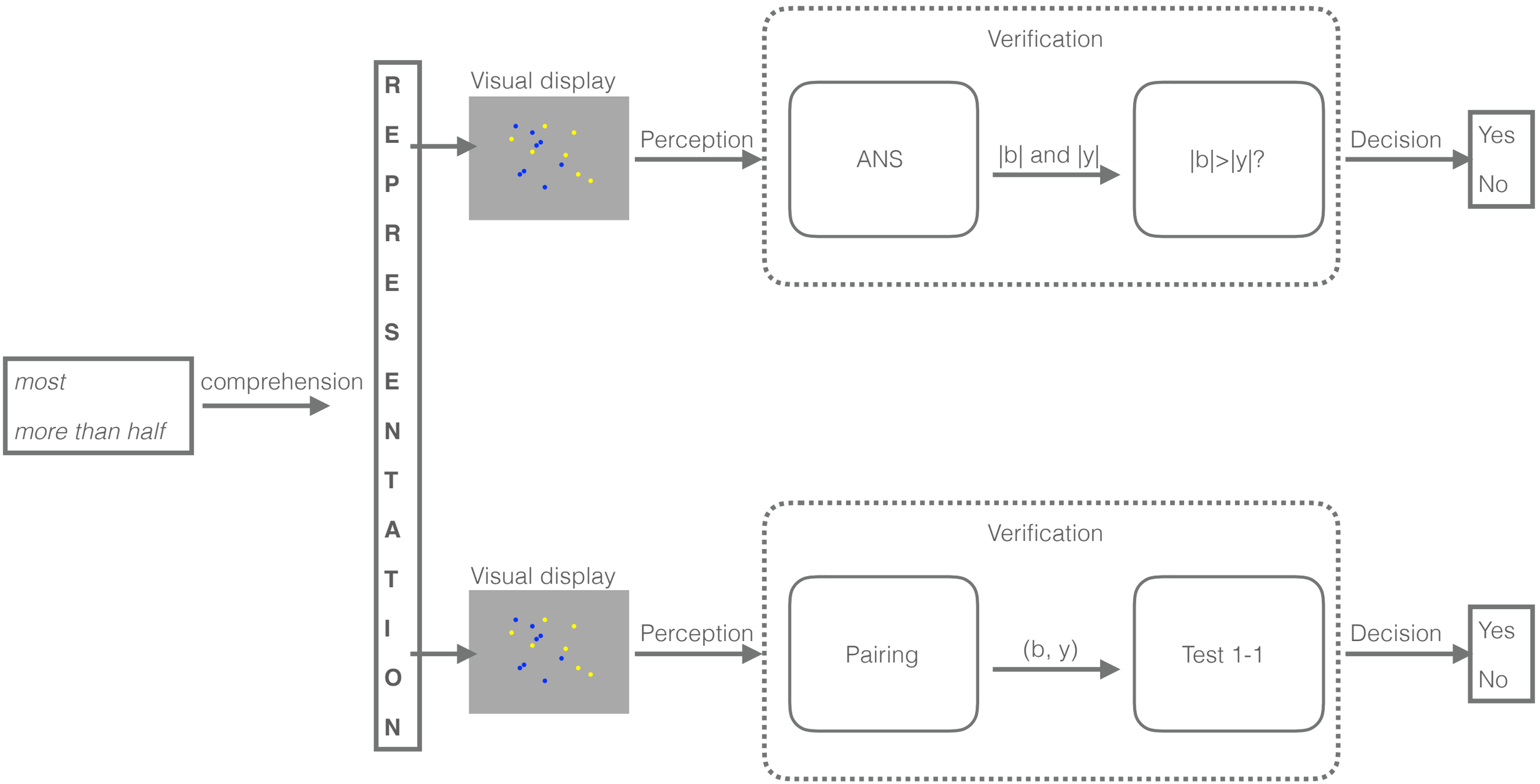
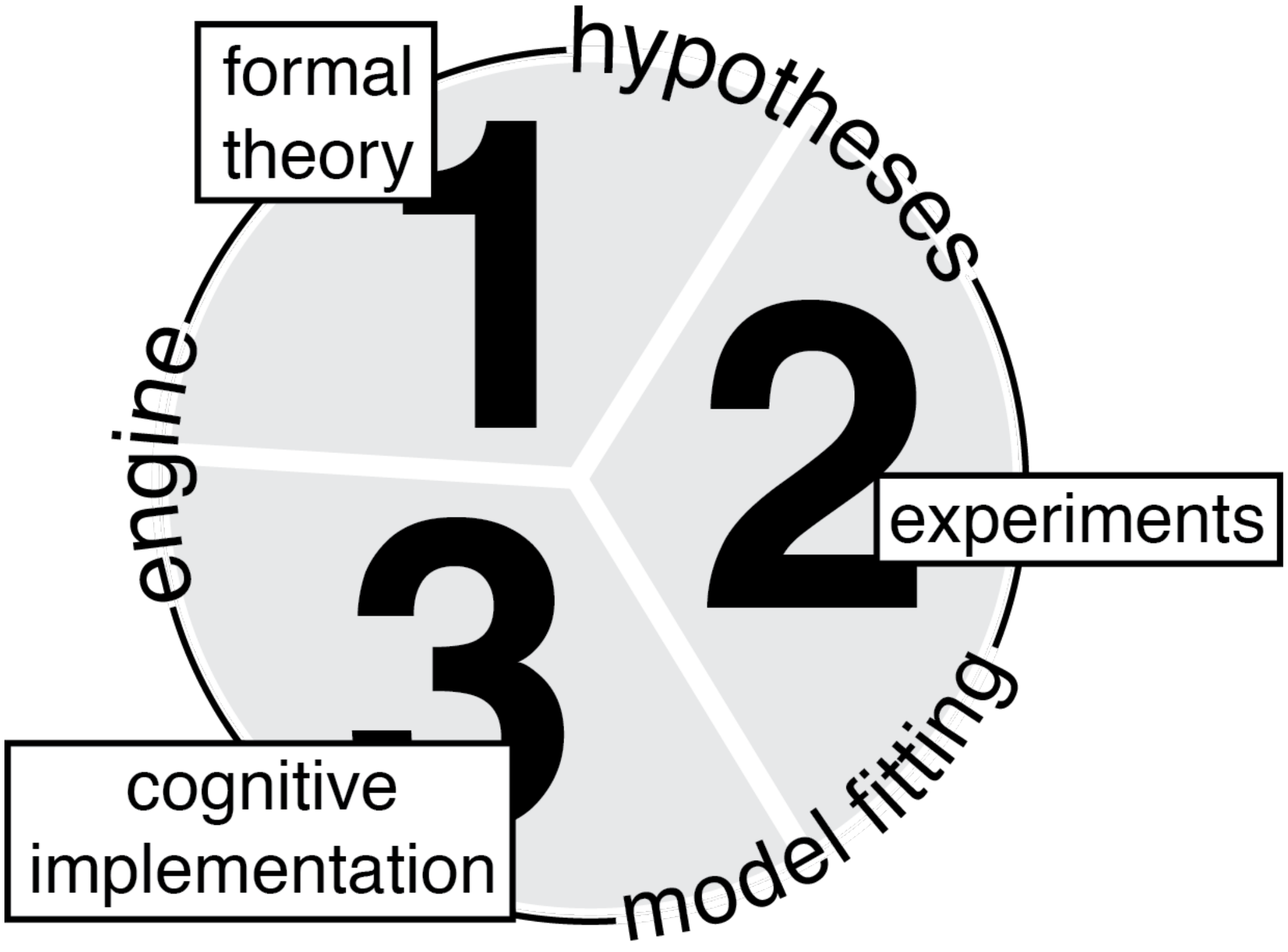


Also: reasoning, comprehension, use, learnability, pragmatics, etc.

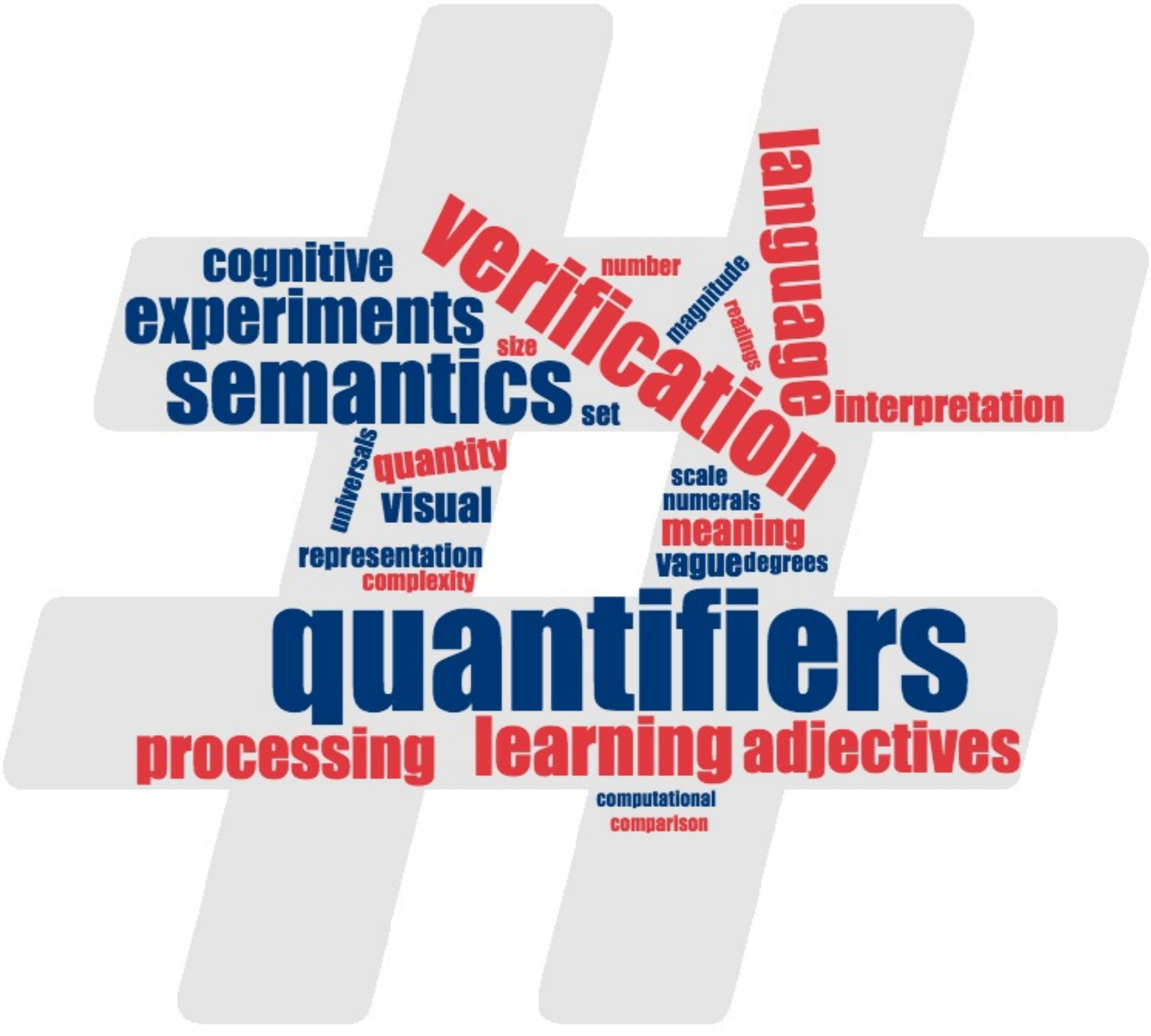
WITHOUT GIVING UP ON NEITHER:

- Mathematically rigorous: explanatory power
- Cognitively plausible: predictive power

IDEAL INTERDISCIPLINARY SCENARIO



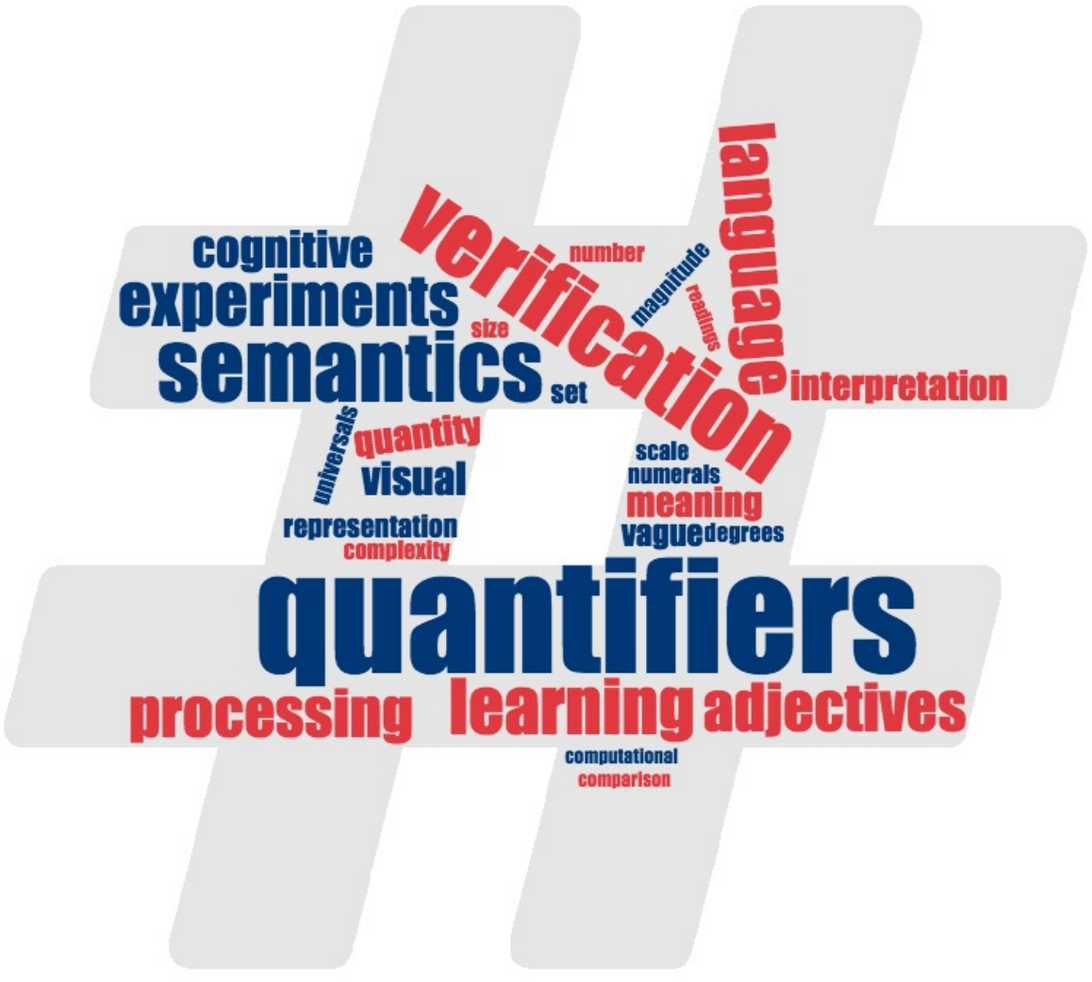
WE NEED EXPERTISE EXCHANGE



WE ALSO NEED A VIBRANT COMMUNITY

Quantity in Language and Thought

LET'S KICK IT ALL OFF



- Location Singel 424
- Coffee: from 9ish
- De Ysbreeker tonight at 20hrs
- Closing with a general discussion
- Sharing slides/links/papers

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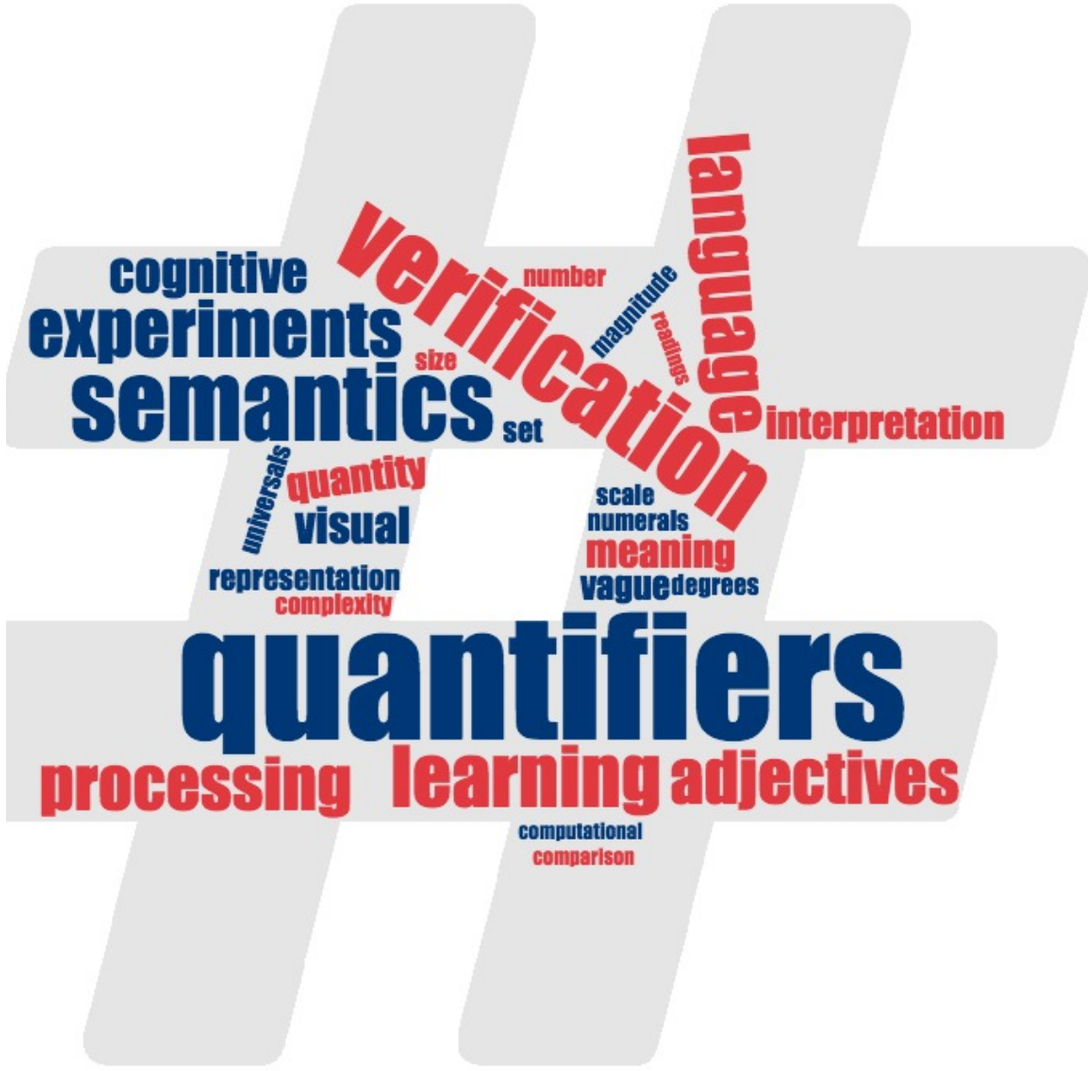

DISCUSSION

Cognitive Semantics & Quantities

QUESTIONS

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What’s the meaning of most?

SOME GENERAL QUESTIONS

- What are basic linguistic operations relevant to meaning?
  - subprocesses/LoT/covert operators, etc.
- What are the neurocognitive structures supporting them?
- What are the basic linguistic tasks we should model?
  - comprehension, representation, verification, decision, learning, actions, expectations,…
  - How do they interact?
- What is more interesting cross-linguistic ~ or ≠ ?
- What about individual differences/mixtures of `strategies'?
- What are the `quantifiers' we should be focusing at?
- What's the distinction between process or the product?