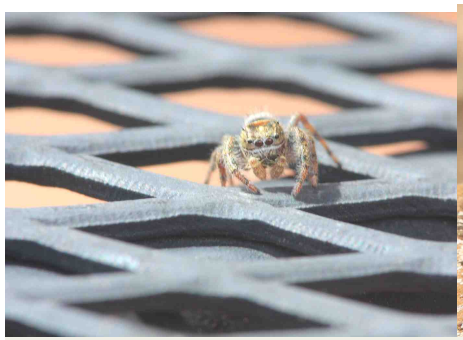


Meaning Internalism and Natural History

Paul M. Pietroski
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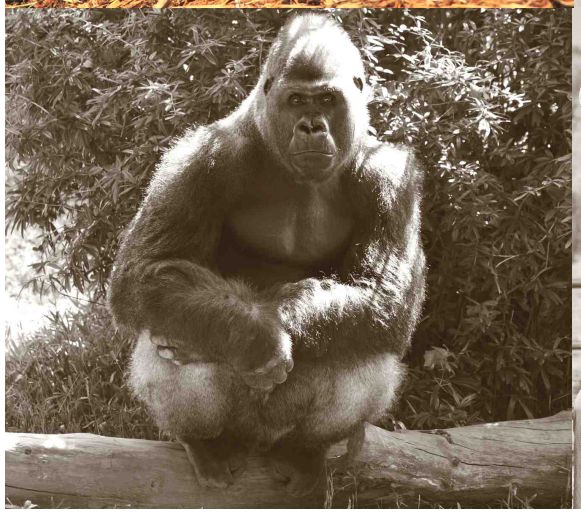
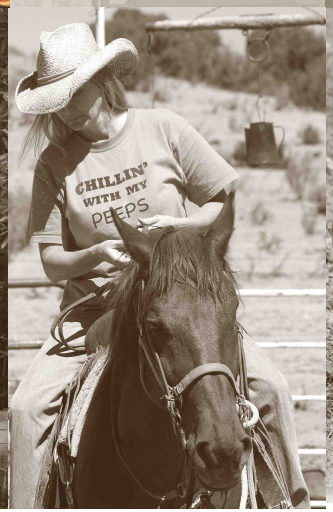




Outline for the Talk

- Opening Act: Proper Nouns and a Wonder Dog
- Human Language Capacity: a seemingly miraculous phenotype
  - Vocal Learning
  - Enhanced Mind-Reading
  - Acquisition of Remarkable Lexical Items
  - Recursive Combination of these Lexical Items
- Lexicalization First: a strategy for minimizing miracles
  - Words before Pronunciations
  - Blame words for a lot of what's special about human cognition

Proper Nouns are not Labels

- English sentences like (1) can be misleading

  (1) Peter arrived
  (2) Mary saw Peter
  (3) Mary saw Peter arrive

- Consider some other examples

  (4) There were three Peters at the party, and every Peter was a lawyer
  (5) There were three lawyers at the party, and every lawyer was a Peter
  (6) The tall Peter arrived early, and so did the short one
  (7) The first Peter I met was nicer than that Peter over there
  (8) The Peter I know would never say that
  (9) The Petersons are coming to dinner, but Prof. Peterson will be late
  (10) Their little Peter is a little Napoleon who our Patricia doesn't like

Proper Nouns are not Labels

Many other languages are less misleading in this respect

- In Greek, to talk about a male who is called ‘Petros’,
  you use a (masculine) determiner to form ‘o Petros’
  [Giannakidou and Stavrou]
- Spanish allows ‘El Juan’, German allows ‘Der Hans’, …
- Even in English, pronouns are obviously not mere labels:
  ‘she’, ‘he’, ‘it’, ‘this’, ‘that’, ‘these’, ‘those’
- The subject of ‘Peter arrived’ is presumably the result of *combining* the lexical noun ‘Peter’ with a *covert* analog of ‘o’ in ‘o Petros’
- (1) ~~that~~ Peter arrived

Proper Nouns are not Labels

- To be sure, (11*) and (13*) are not quite right

  (11*) man arrived [cp: '***that*** man arrived']
  (12*) woman saw man [cp: '***the*** woman saw ***a*** man']

- But (14) and (15) are fine, just like (1) and (2)

  (14) men heard women speak
  (15) water arrived, followed by chips, salsa, and guacamole

  (1) Peter arrived
  (2) Mary saw Peter

- For whatever reason, English requires an *overt* determiner—e.g., 'a', 'the', or 'that'—with an *unplural* common *count* noun.

  But the contrast between (11*) and (1) is *not* evidence that the lexical noun 'Peter' is a label for some guy.

Proper Nouns are not Labels

- Given all the available data, it's pretty clear that proper nouns are like common nouns in being *predicates* rather than *labels*

  There were three lawyer-s at the party, and every lawyer was a Peter

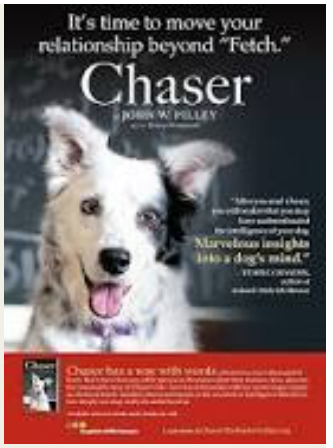
  There were three Peter-s at the party, and every Peter was a lawyer

  That Peter arrived late, and so did this one

  ∅-Peter arrived late

- Nonetheless, "bare" uses of English proper nouns are *typical*
  - so why don't *kids* treat these words as labels for people/places/things?
  - it's easy to imagine (and invent) languages that work this way, and hence *don't even permit* phrases like 'three Peters', 'every Peter', or 'that Peter'

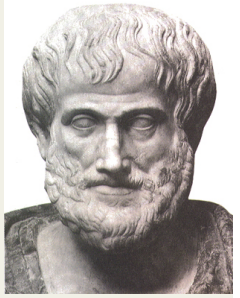
Chaser, the Wonder Dog

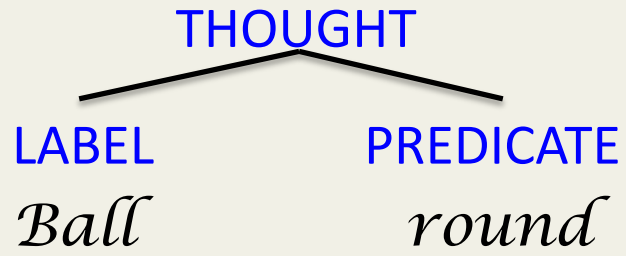


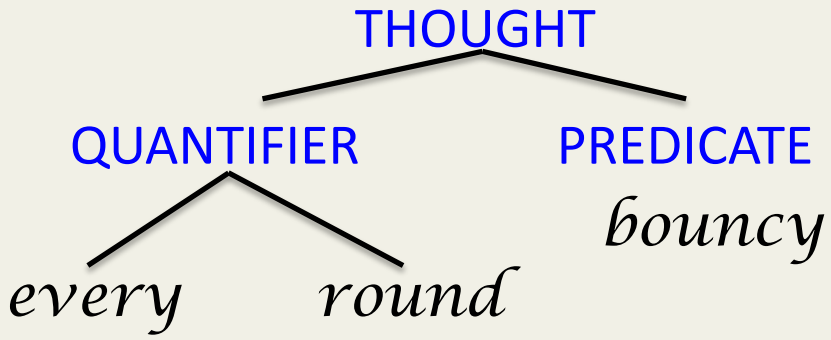
Taking the reports at face value…

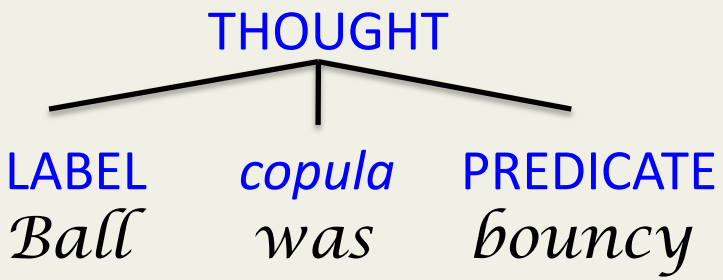
- a Border Collie who learned about 1000 auditory *labels* for retrievable things, often in ways which suggest a capacity to infer that a novel sound is a label for a novel thing
- also learned some *predicates*, corresponding to certain shapes and/or functions of the retrievable things
- also learned some *command patterns* (e.g, 'take Ball to Sock', 'take Sock to Ball', 'touch Ball with nose', 'touch Sock with paw')
- a model of both animal intelligence and how the human process of acquiring words *doesn't* work

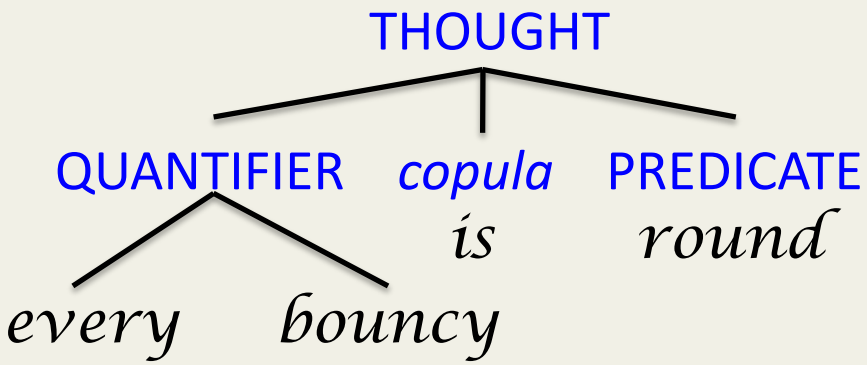
I assume that many animals can form
Subject-Predicate ***thoughts***, at least to some degree



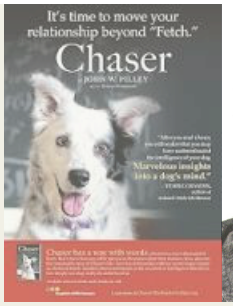


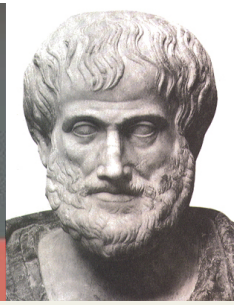


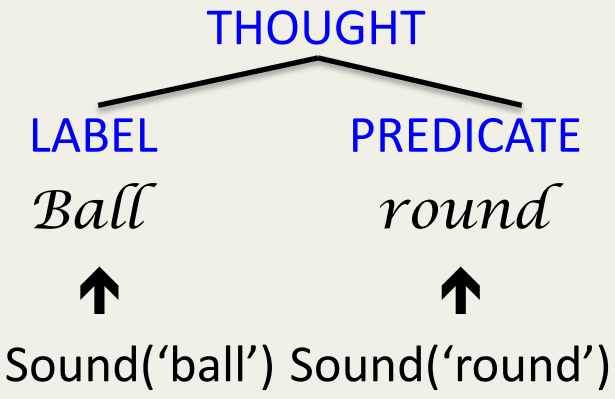


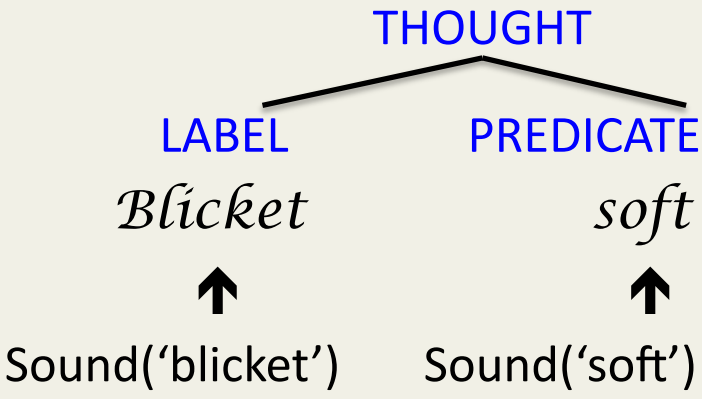


at least one dog can pair sounds with more than 1K mental labels, and at least some predicates

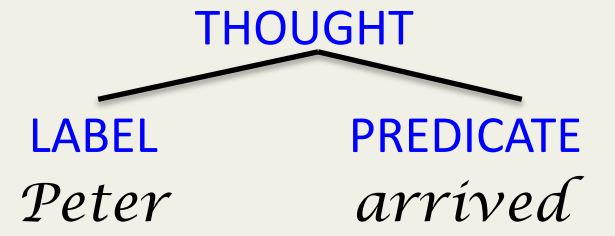


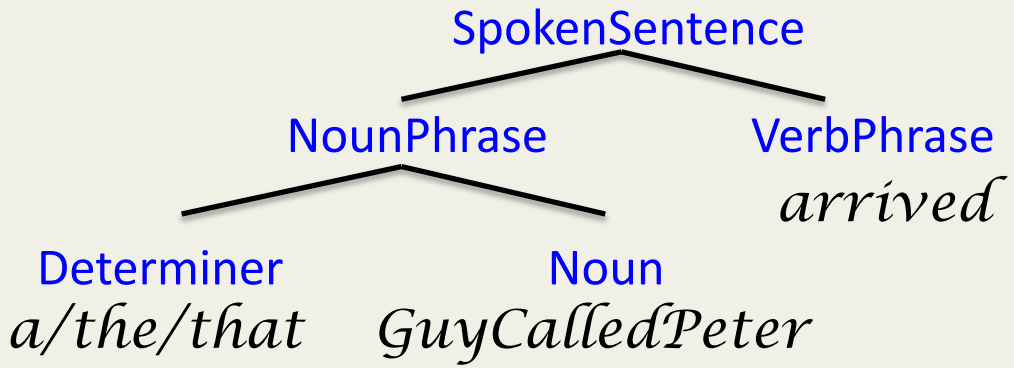




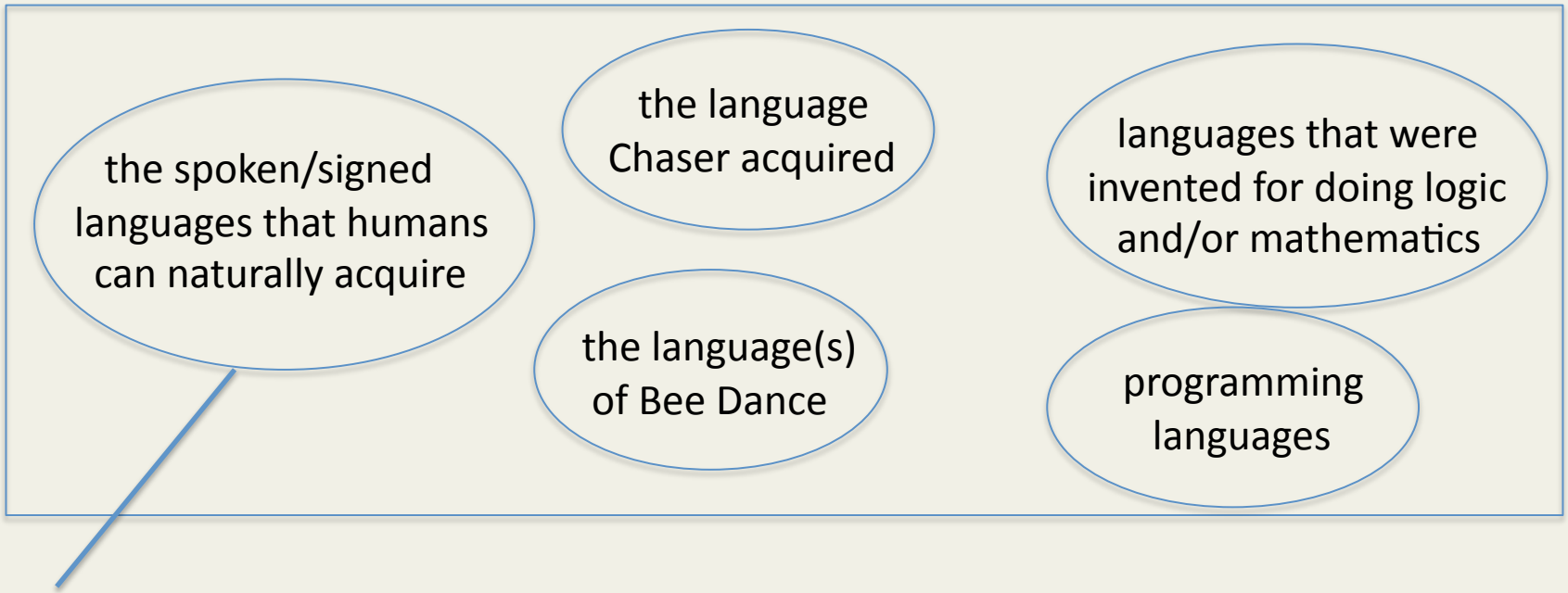


So why *don't* proper nouns work this way? Why do *we* circumlocute?



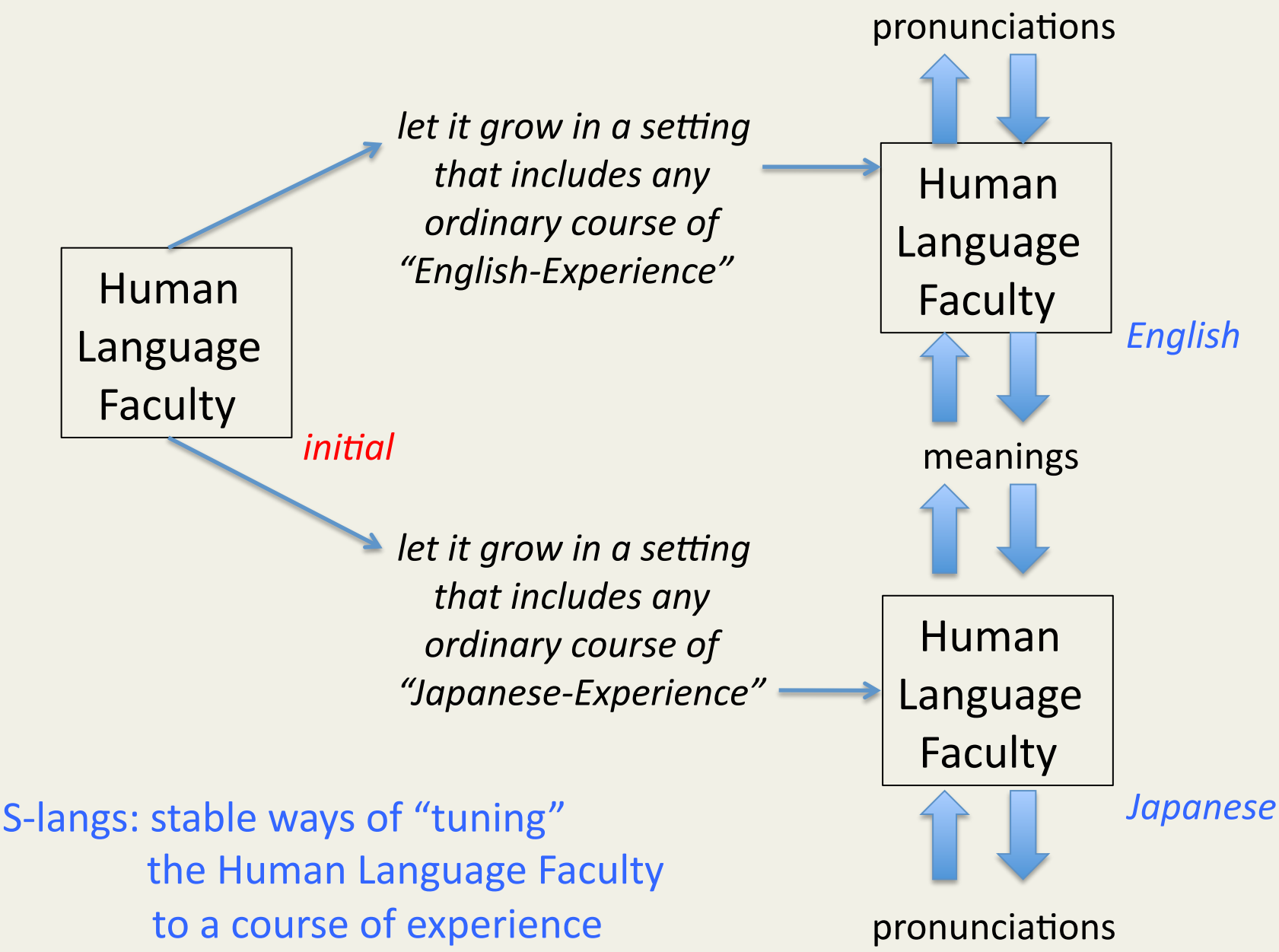


Languages: "things" that connect signals of some kind
with interpretations of some kind



S-langs: child-acquirable languages that connect
unboundedly many signals of a special sort (pronunciations) with
unboundedly many interpretations of a special sort (meanings)

biologically implemented generative *procedures*
that connect pronunciations with meanings *in human ways*

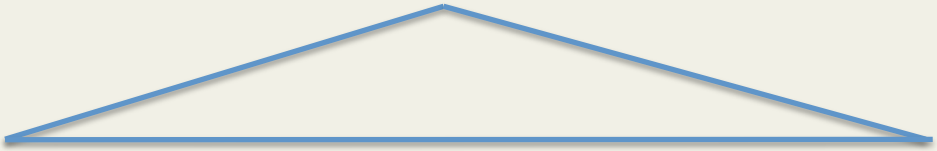


S-langs: stable ways of "tuning"
the Human Language Faculty
to a course of experience

Outline for the Talk

- ✔ Opening Act: nouns and a Wonder Dog
- Human Language Capacity: a seemingly miraculous phenotype
- Lexicalization First: a strategy for minimizing miracles

What are the distinctive (and plausibly heritable) aspects of Human Linguistic Capacities?



What's distinctive about the S-langs that we acquire by using these capacities?

unbounded yet constrained combination of lexical items that exhibit homophony and polysemy

What distinctive talents do Human Infants have?

Some Features of S-langs and Meanings (but not the language that Chaser acquired)

- *homophony* of two kinds
  - lexical ('bank', 'pen', 'run', …)
  - phrasal ('ready to eat')

- lexical *polysemy*
  - books (throwable, count in terms of copies)
    books (downloadable, count in terms of contents)
  - windows (breakable, rocks cannot pass through)
    windows (openings, rocks can pass through)

Lexical Polysemy is Ubiquitous

- Someone defaced this book, and someone plagiarized that book.
- A visitor knocked on the door and broke the window.
  A visitor walked through the door and opened the window.
- This country (France) is hexagonal, and it is also a republic.
- The lines of this triangle are not straight.
  The lines of a real triangle have no width.
  The man with lines in his face was in the line to buy fishing line.
- This square has rounded edges. But you can't square a circle.
- He likes green ones. Green is his favorite color. Greens suit him.
  The paint is green, and the bottle is green, and so are the apples.

Two ways that a pronunciation can be

conceptually equivocal

Homophony

(e.g., bank)

Distinct words connect the same pronunciation with with different meanings, *each* of which can be used to access a concept.

--typically *arbitrary*

--linguistically *accidental*

Polysemy

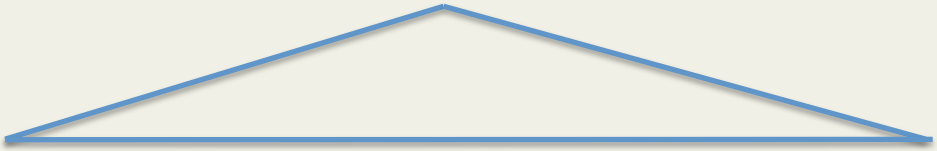
(e.g., book)

A single word connects its pronunciation with a meaning that can be used used to access any member of a certain concept-*family*.

--related *sub*senses

--common *across* Slangs

What are the distinctive (and plausibly heritable) aspects of Human Linguistic Capacities?



What's distinctive about the S-langs that we acquire by using these capacities?

What distinctive talents do Human Infants have?

What are the compensations for the dangerously extended ontogeny (and acquiring a "second nature" after birth)?

What distinctive talents do Human Infants have?

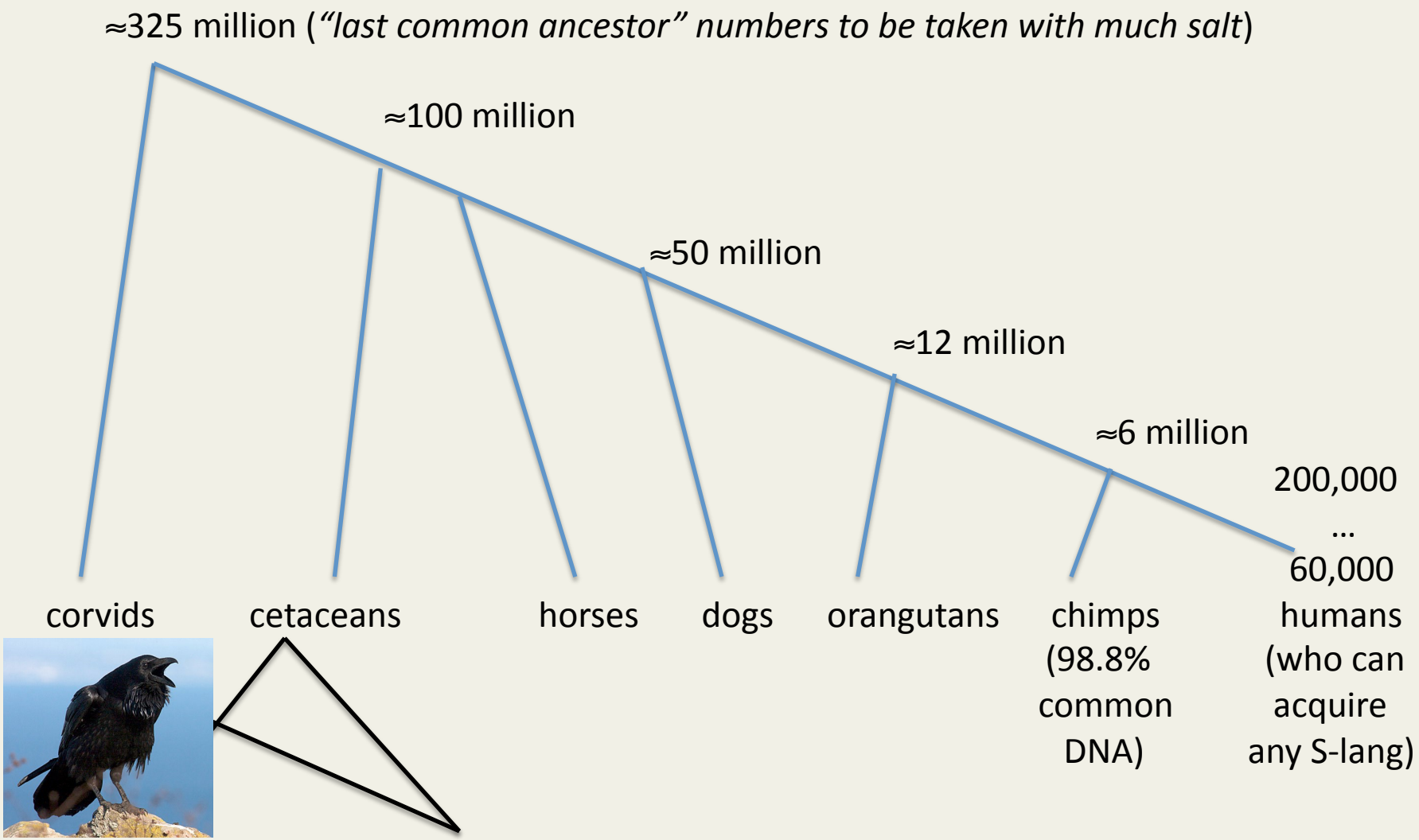
- a cluster of Perceptual/Articulatory capacities,
  which together support a *human form* of Vocal-Learning;

  other Vocal-Learners: *songbirds, parrots, hummingbirds,*
  whales, dolphins, seals and sea lions, bats, elephants,
  (more limited reports for *mice, goats, chimps*)

- an enhanced form of Mind-Reading
  - unusually good for primates (Tomasello)
  - a presumably related capacity to identify "speech gestures," audible or visual, as intentional/communicative (Baillargeon)

- an astounding capacity to acquire lexical items
  - pronunciation-meaning pairs that are *atomic* and *combinable*
  - thousands of non-labels, without tailored experience

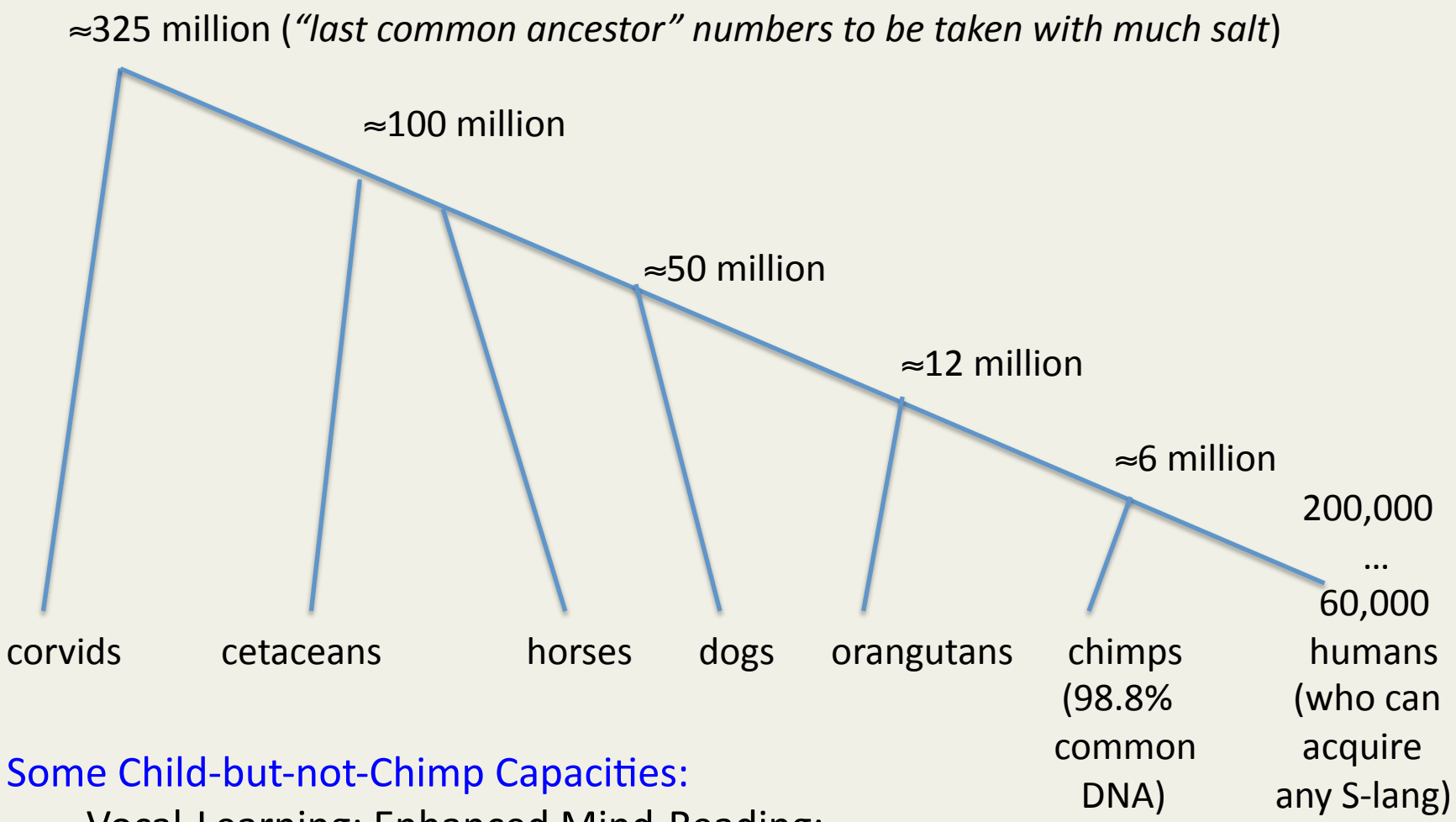

≈325 million (*"last common ancestor" numbers to be taken with much salt*)
≈100 million
≈50 million
≈12 million
≈6 million
200,000
…
60,000
corvids
cetaceans
horses
dogs
orangutans
chimps (98.8% common DNA)
humans (who can acquire any S-lang)



Vocal-Learning and Mind-Reading are not uniquely human capacities.

But humans also acquire lexical items with a vengeance. We hit the trifecta.

(We should probably be glad that ravens don't lexicalize.)



Some Child-but-not-Chimp Capacities:

Vocal-Learning; Enhanced Mind-Reading;
Rampant-Lexicalizing; Phrasal-Composition

Methodological Principle:

"Minimize Miracles"

Two (of many) Logically Possible Histories

- Some "hominin" who was a decent Mind-Reader begat some Vocal-Learners, who begat some Lexicalizers, who begat some Combiners. Acquiring lexical items is fundamentally a matter of pairing available ("pre-linguistic") mental representations with *pronunciations*. Lexicalizing and Combining were advantageous because they allowed for a distinctive kind of *communication*.

But in that case…

why did Vocal-Learning emerge in our lineage?

and how did connecting it to S-langs lead to the option of signing?

why do we (but not corvids) link noises with concepts?

why do we (unlike Chaser) complicate sound-concept pairings?

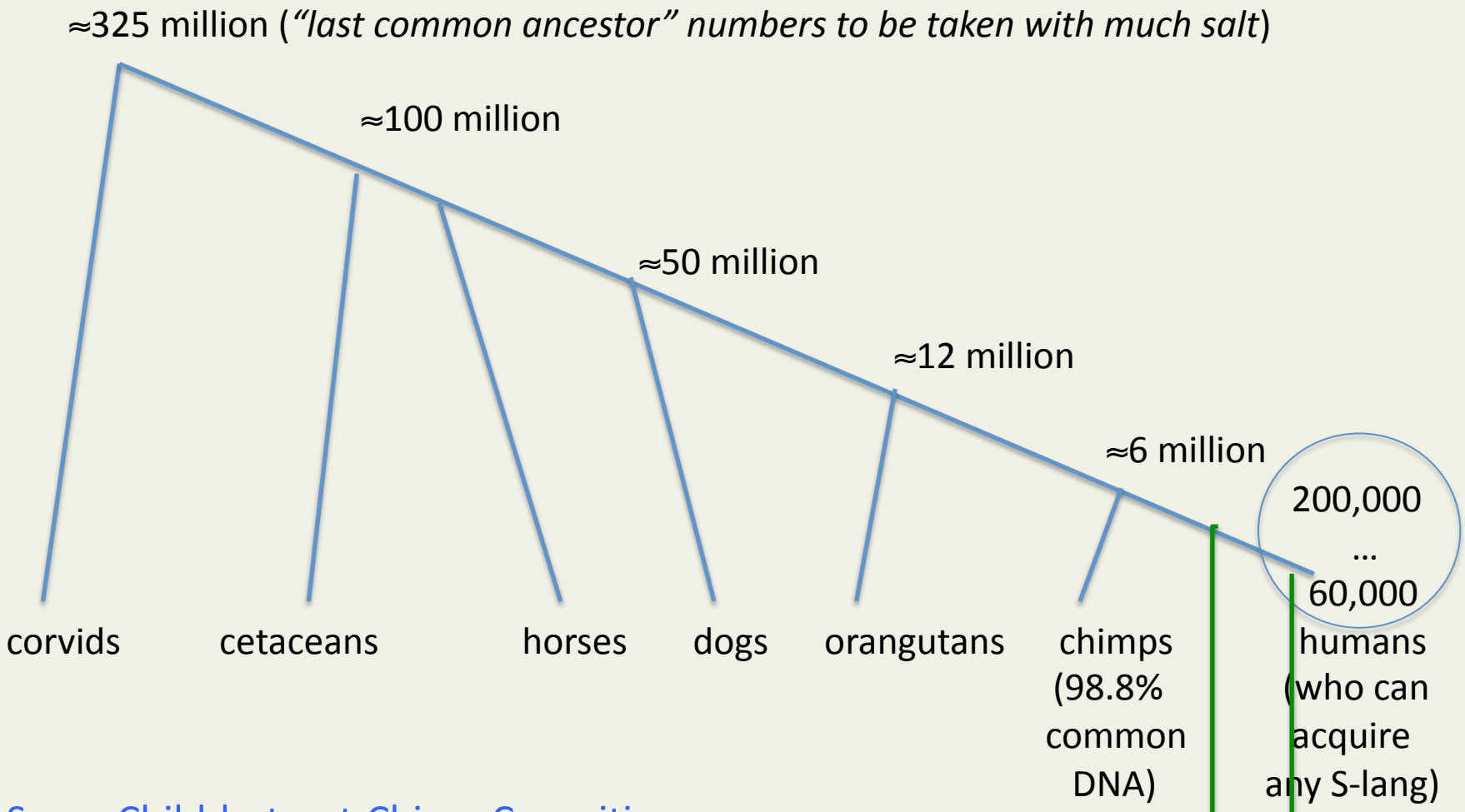
why recursive combination, if communication is the driving force?

does this require too many recent miracles, in just the right order?

Two (of many) Logically Possible Histories

- Some "hominin" who was a decent Mind-Reader begat some Vocal-Learners, who begat some Lexicalizers, who begat some Combiners. Acquiring lexical items is fundamentally a matter of pairing available ("pre-linguistic") mental representations with *pronunciations*. Lexicalizing and Combining were advantageous because they allowed for a distinctive kind of *communication*.

- Some "hominin" who was a decent Mind-Reader begat some Lexicalizers, who begat some Vocal-Learners. Initially, lexicalizing had nothing to do with pronunciation. Acquiring lexical items was—and still is—a process of using available representations to *introduce* mental symbols that are systematically combinable. But given lexical items that were used as "tools for cognition," *adding* pronunciations was also useful.



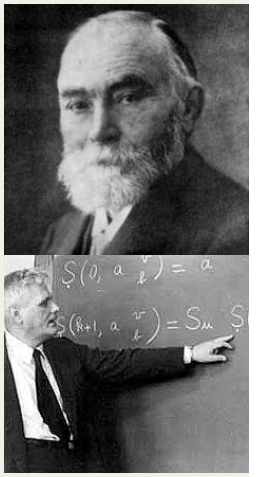
Some Child-but-not-Chimp Capacities:

Rampant-Lexicalizing;

Phrasal-Composition;

Vocal-Learning; Enhanced Mind-Reading and enhanced uses of S-langs

Lexicalization First:
a strategy for minimizing miracles



- often, the value of an *invented* language is that it provides a new representational *format* that affords new opportunities for combining inputs and performing computations
- homophony and polysemy are not especially friendly to selectively useful communication
- but polysemy suggests a kind of cognitive *integration*
- and whatever we say about lexical items, we can use them to express concepts that are strikingly *unisolated*
- maybe lexical items let us use old concepts (e.g., mental labels) to create new analog concepts (e.g., mental predicates) that exhibit a common representational *format*

Yet another Evolutionary Puzzle

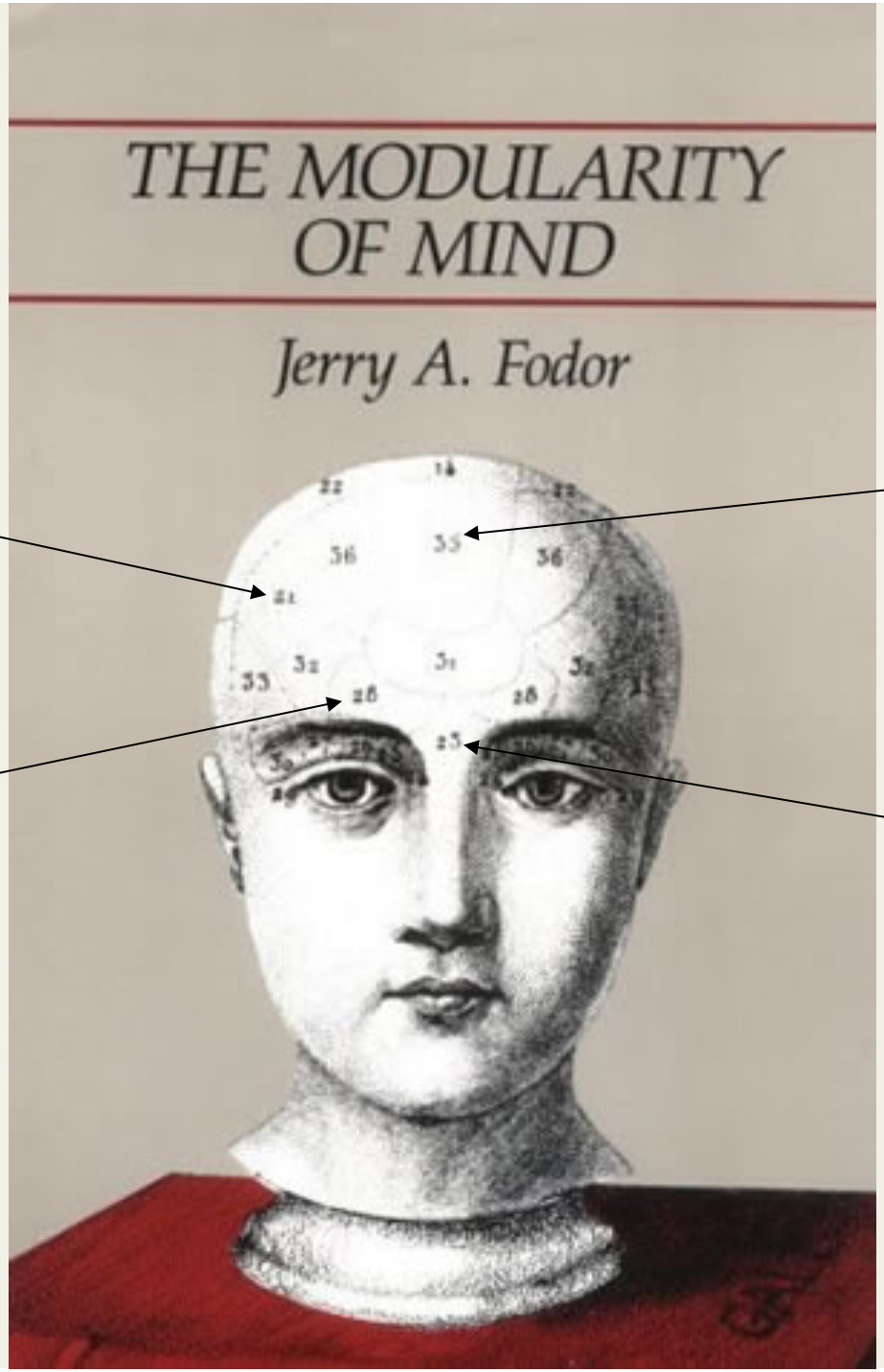
- A Lot of Cognition is Modular
  - sensory transducers
  - other "informationally encapsulated" systems
- Human Thought is Unified
  - phenomenological considerations
  - systematic composability of (lexicalizable) concepts

    for any *n* concepts that we can lexicalize,
    we can form endlessly many concepts
    that have those *n* concepts as constituents
- How can a *modular* mind be so *unified*?
  - Maybe words are part of the answer (Spelke, Carruthers)

Putting the question crudely:

How does Area 21…

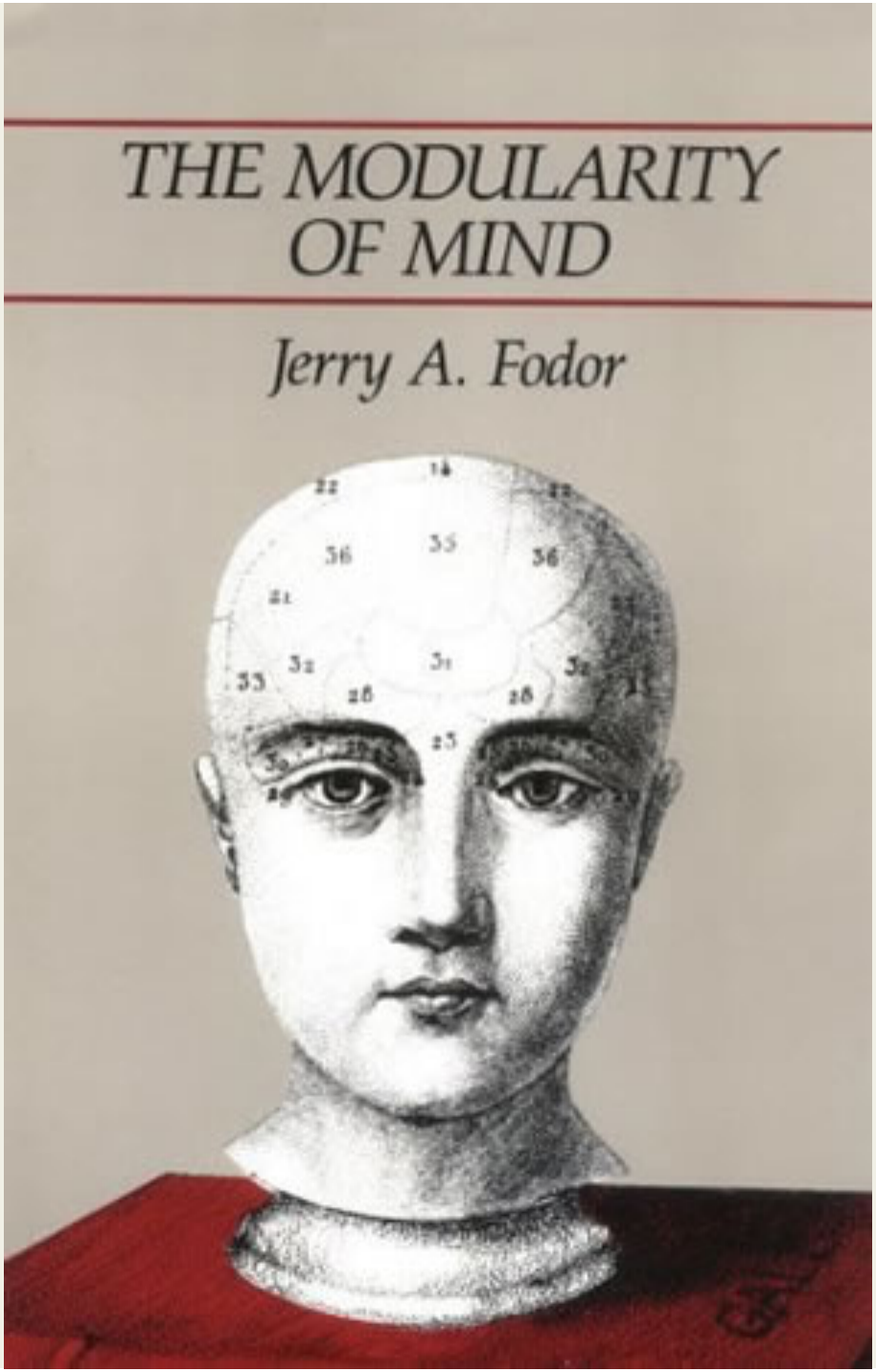
talk to Area 28?



If 35 can talk to both…

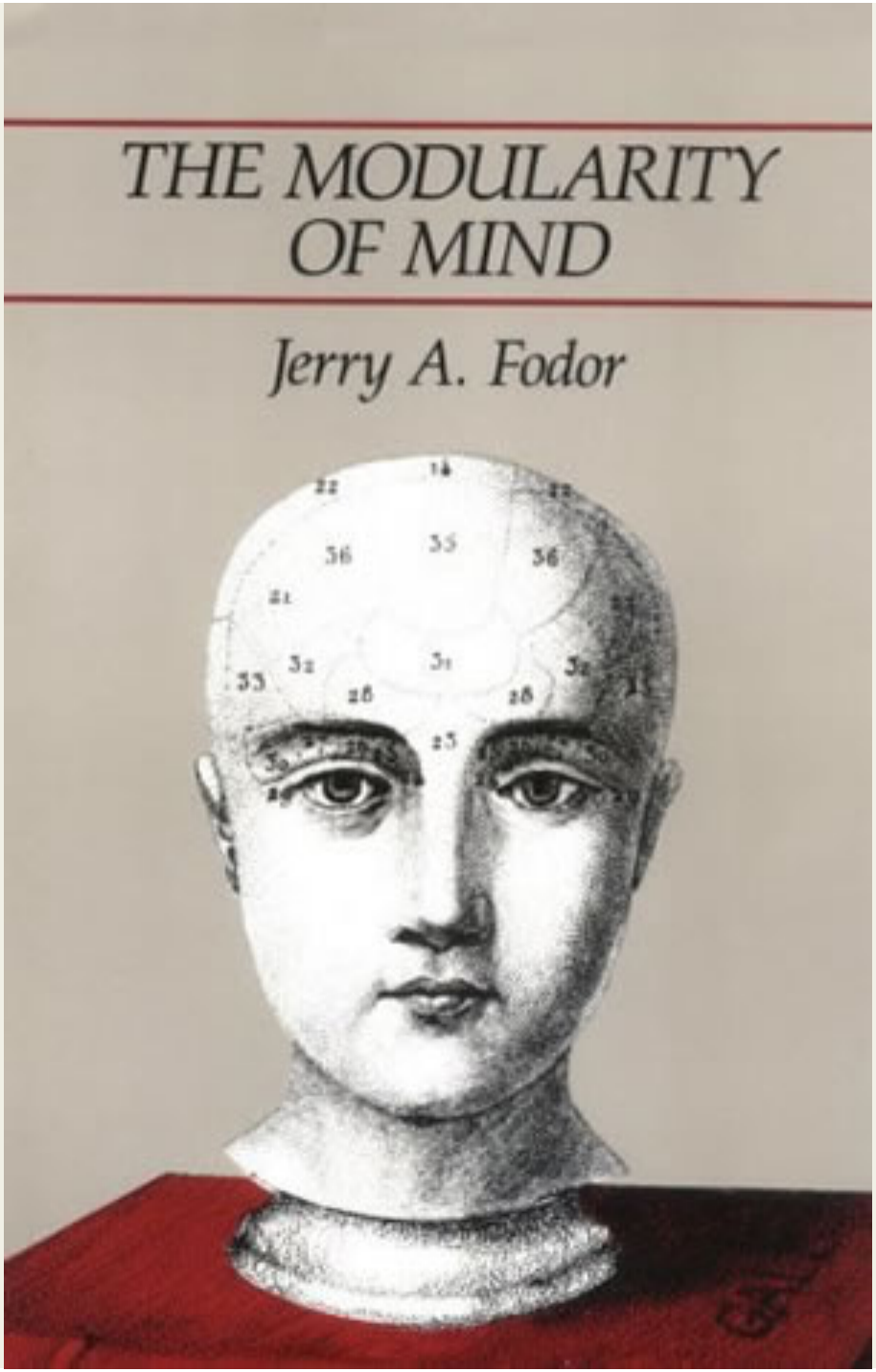
can 35 also talk to 25?

A little less crudely…



how does information from *disparate* modules get combined in a way that leads to *unified* thought?

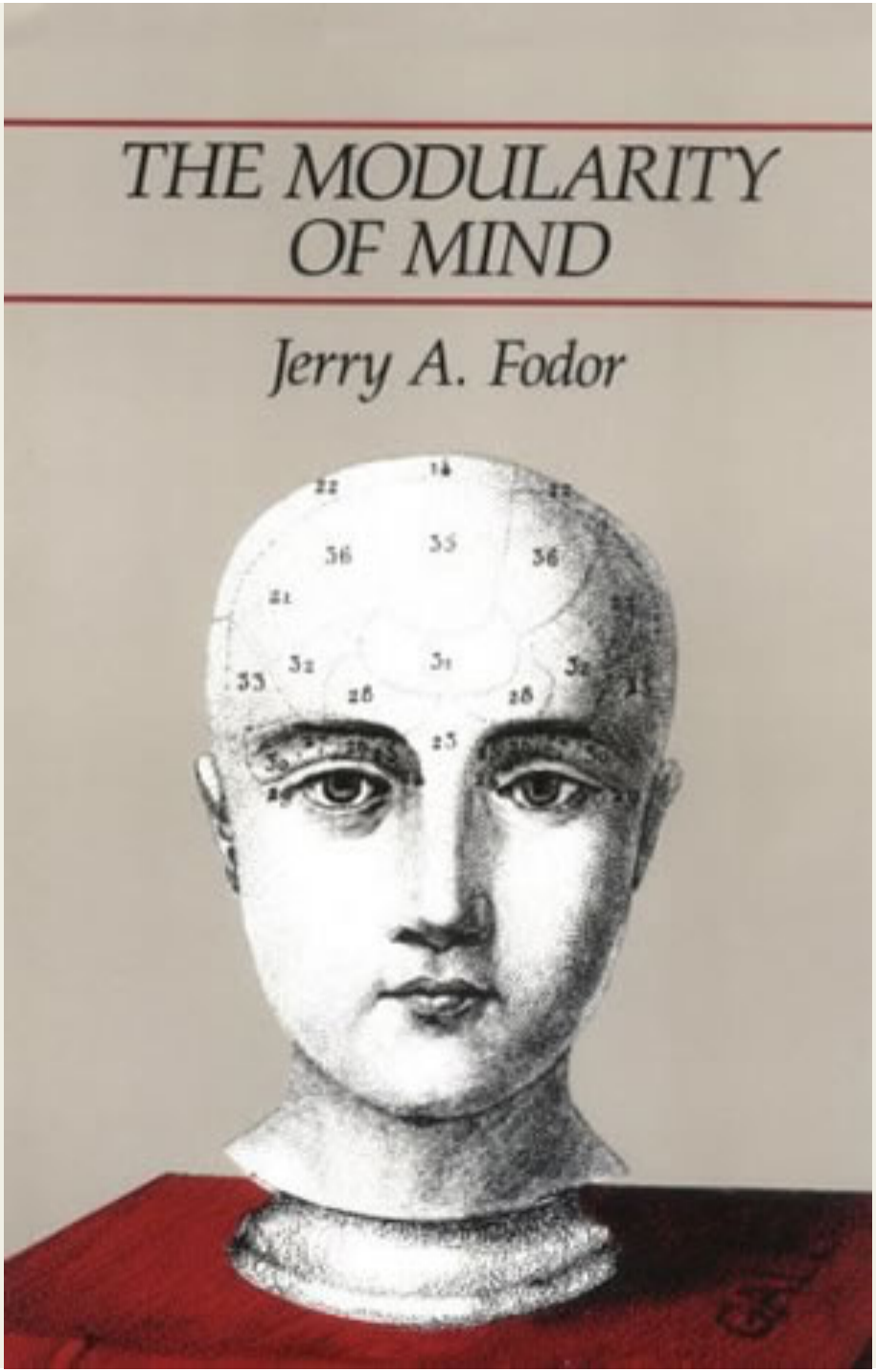
One can (and Fodor did) posit a "central" Language of Thought, whose atomic elements are "concepts" that exhibit two key features:



(i) they can *interface* with simpler mental symbols that are confined to modules;

(ii) they can *combine* with each other, systematically, much like lexical items

On this view, S-langs let us *express* concepts that minds already have. The combinability of words reflects the *prior* combinability of concepts.



The idea was that meanings *are* concepts.

On this view, lexicalizing a concept is a matter of *labeling* it with a pronunciation, and maybe a grammatical categorizer like 'noun' or 'verb'.

Bloom: *How Children Learn the Meanings of Words*

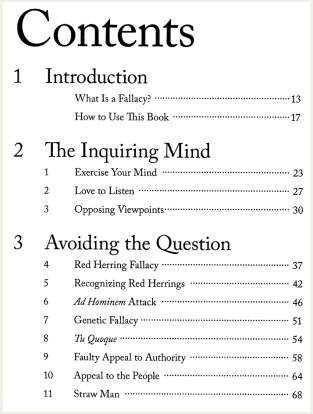
- word meanings are, at least primarily, concepts that kids have *prior* to lexicalization
- learning word meanings is, at least primarily, a process of figuring out *which* concepts are paired with *which* sounds
- in figuring this out, kids draw on many capacities—e.g., recognition of *speaker intentions* (see Grice) and *syntactic cues* (see Gleitman)—though none that are specific to acquiring word meanings
- But modulo the syntactic cues, that's a description of Chaser. And while syntax gives kids useful clues about *which concepts to lexicalize with verbs*, syntax doesn't tell them that proper nouns are not labels, or that lexical items are polysemous.

books (throwable)

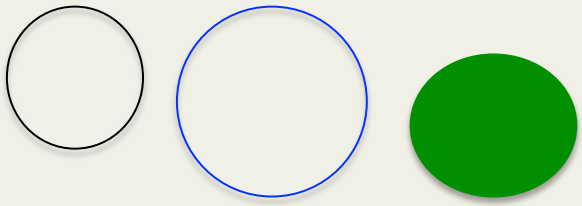
BOOK:CONTAINER

meaning('book')

books (downloadable)



BOOK:CONTENT



circles (perceptible, not ideal)

CIRCLE:SPATIAL

meaning('circle')

circles (ideal, not perceptible)

CIRCLE:ABSTRACT

At this point, I really should provide…

- a formalism that shows how many kinds of concepts, available to human infants, could be used to *introduce* concepts that exhibit a distinctive *format*; where this format is especially conducive to systematic combination of mental *predicates* via relatively simple combinatorial operations
- empirical evidence of many *mismatches* between the concepts we lexicalize and the concepts we access and assemble by using S-langs

But since lunch beckons, let me

- skip the formalism and advertise *Conjoining Meanings: Semantics Without Truth Values* (in press, OUP)
- end with just a few examples of the mismatches I have in mind

- BETWEEN(SOCK, BALL, CAR)

  The sock *is between* the ball *and* the car.

  *The sock *betweens* the ball and the car.

- FROM(PETER, CHICAGO)

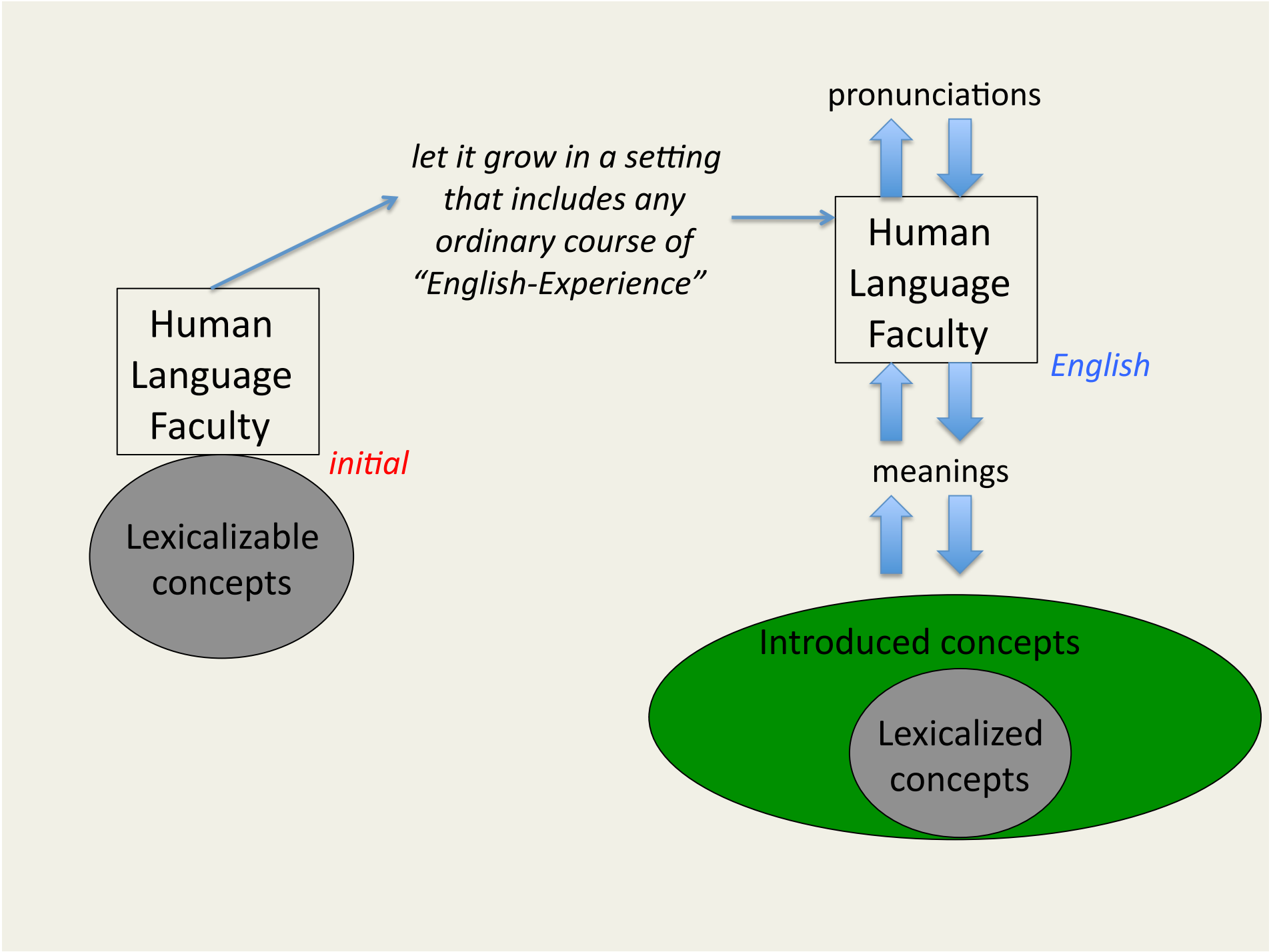
  Peter is from Chicago.

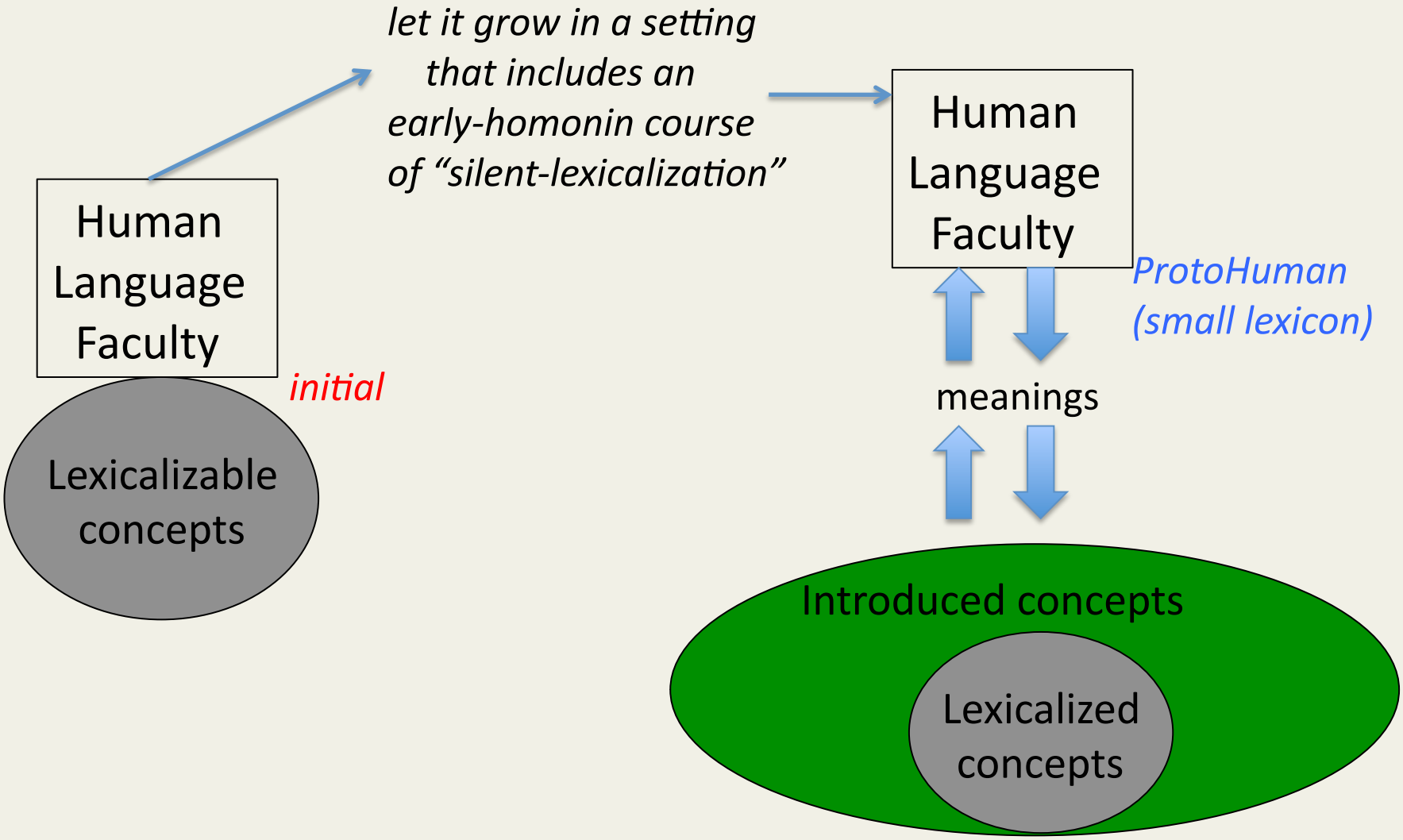
  Peter froms Chicago.

- TALLER(MARY, PETER)

  Mary is taller than Peter.

  *Mary talls Bill.


pronunciations
let it grow in a setting
that includes any
ordinary course of
"English-Experience"
Human
Language
Faculty
English
Human
Language
Faculty
initial
meanings
Lexicalizable
concepts
Introduced concepts
Lexicalized
concepts


let it grow in a setting
that includes an
early-homonin course
of "silent-lexicalization"
Human
Language
Faculty
initial
Lexicalizable
concepts
Human
Language
Faculty
ProtoHuman
(small lexicon)
meanings
Introduced concepts
Lexicalized
concepts

Outline for the Talk

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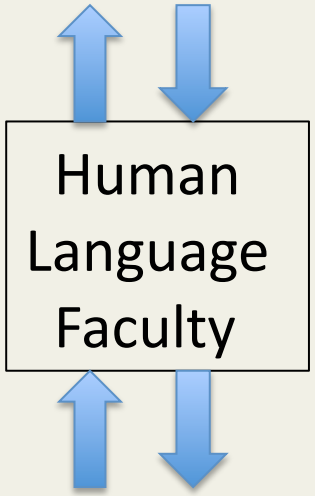
Thanks!

pronunciations
(instructions for how to produce signals)



English

meanings
(instructions for how to build concepts)

Halle (1990, p.47):
The signal is a result of "a particular gymnastics executed by certain anatomical structures," including the lower lip, tongue, soft palate, and larynx.

...the acoustic signal that strikes the ears during speech is produced by changes in the geometry of the vocal tract. An X-ray motion picture recording the behavior of the vocal tract in the course of producing a particular utterance bears a striking resemblance to a stylized dance performed by dancers of great skill. If utterances are regarded as "dances" performed by…movable portions of the vocal tract, then one must also suppose that underlying each utterance ("dance") there is a "score" in some "choreographic" notation that instructs each "dancer" what to do and when.

- phrasal homophony is subject to interesting *constraints*
  - 'eager to eat' vs. 'easy to eat'
  - 'a spy called a politician from Russia'

    (i) a spy called a politician, and the politician was from Russia

    (ii) a spy called a politician, and the call was from Russia

  but not (iii) a spy called a politician, and the spy was from Russia

but Meanings don't seem to be Concepts

- lexical meanings are polysemous
  - as if a lexical meaning is an instruction that calls for *some* concept from an address that can be shared by several concepts (even if the address was initially unequivocal)

- phrases exhibit constrained homophony
  - as if a phrasal meaning is an instruction for how to assemble a complex concept, in a particular way, from concepts that are accessed via lexical items (even if those lexical concepts could be combined in other ways)

- indeed, the constraints on homophony trump conceptual incoherence
  - -- The guest who *was* fed waffles fed the parking meter. [coherent]
  - -- The guest who fed waffles *was* fed the parking meter. [incoherent]
  - -- *Was* the guest who fed waffles fed the parking meter? [unambiguously incoherent]