Logical polysemy and constructivist lexicons

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Background, question, aims

- **Background:** work on Travis cases (Dobler 2019, 2022), Chomsky and Wittgenstein (Dobler 2013, 2014), Fodor (Dobler 2020), recent work with J. Collins on Pietroski (Collins and Dobler 2025)

- **Main Question:**
  - *How can we explain logical polysemy within the framework of semantic internalism (and distinguish it from occasion-sensitivity)?*

- **Goals:**
  - Distinguish structural effects on word meaning from pragmatic effects.
  - Develop a **constructivist** approach to lexicon that accounts for structurally driven alternations in meaning.
    - Why constructivism? Independent motivation ("Single syntactic engine")
    - Methodological motivation: since words are not considered atomic, there is less chance to conflate reference with structure

Approaches to Polysemy

- *Rich Lexicon* (Pustejovsky 1995, Asher 2011, Jackendoff 2002)
  - Encodes extensive semantic / argument / qualia structure, dot types
  - Aligns with lexicalism (wrt how much info is inherent to lexical items)
- *Thin Lexicon* (Ruhl 1989)
  - Encodes minimal/no semantic information / abstract representation
  - Aligns with constructivism (Borer 2005, Marantz 2013, Ramchand 2008)
    - Only lexical roots are listed in the lexicon, no other information
- *Dual Lexicon* (Carston 2019, 2020, 2022) – distinguishes the linguistic from mental lexicon (thin vs. rich)
  - Lexical roots are hooks for families of atomic concepts

Challenges

- Rich Lexicon:
  - Fails to separate lexical from world knowledge (Fodor & Lepore 1998)
  - Category mistakes / coercion effect / selection: restrictions borne out of world knowledge not grammar (Borer 2005)
  - Overloads the lexicon, risking explanatory inefficiency (linguistics becomes "the study of everything" Chomsky 2000)

- Thin Lexicon / Dual Lexicon
  - Misses generalizations about systematic alternations (Asher 2011)
  - Conflates structural and pragmatic effects on meaning, esp. concerning argument structure (Ramchand 2013).

- Aim: Combine insights to propose a methodologically sound account of logical polysemy

What is logical polysemy?

- Systematic (Dölling 2020), inherent (Vicente 2018), "book" polysemy (Frisson 2015), logical (Pustejovsky 1995, Asher 2011)
  1. *The book weighs 4lbs* vs. *The book is scary.*   logical polysemy
  2. *The book weighs 4lbs and it is scary*   co-predication
  3. *John memorised and burnt every book in the library*
  4. *The newspaper fired its editor* vs. *The newspaper weighs 4lbs.*

- Alternative aspects:
  - abstract vs. concrete (material) (1)
  - animate vs. inanimate (4)

- Often incompatible metaphysical counting and individuation conditions;
  - Aspect-sensitive quantification in (3)

Occasion-sensitivity

- Travis cases (Travis 2008); Dobler (2019, 2022)

  5. The leaves are green →The leaves are naturally green (botanist context)

  6. The leaves are green →The leaves are painted green (decorator context)

- Interpretation / truth-conditions sensitive to occasions

"A story. Pia's Japanese maple is full of russet leaves. Believing that green is the colour of leaves, she paints them. Returning, she reports, 'That's better. The leaves are green now.' She speaks truth. A botanist friend then phones, seeking green leaves for a study of green-leaf chemistry. 'The leaves (on my tree) are green,' Pia says. 'You can have those.' But now Pia speaks falsehood." (Travis 2008: 111)

- Occasions = extra-linguistic factors;

- To resolve occasion-sensitivity we need to appeal to domain goals

Aspect-sensitivity *vs.* occasion-sensitivity

- **Observation**: "book" ambiguity (abstract vs. concrete object) in (1) can be resolved in a *predicational* context unlike in (5) and (6) where the resolving factor (and the source of alternatives) is extra-linguistic.

- **Key contention**: Logical polysemy differs from occasion-sensitivity (*pace* Vicente 2011, 2015; *pace* Carston 2019, 2020)
  - Logical polysemy is a structural, occasion-sensitivity a pragmatic phenomenon

- **Thesis**: logical polysemy is a case of **aspect-sensitivity** (i.e., interpretation is sensitive to aspects)
  - Aspects are structural

- **Challenge**: How to explain aspect-sensitivity (and that aspects are structural) without presupposing that individual lexical items encode semantic structure (so consistent with constructivism)?

Constructivist lexicons

Dual Lexicon theory:

- *Linguistic Lexicon* – Substantive lexicon (roots) + functional lexicon (functional items, categorial labels).

- *Mental Lexicon* – "User" files (I-concepts) + "system" files (conceptual UG).
    - **No ready made lexical concepts with external denotations!**
    - User file architecture: file name + memos (encyclopeadic info)
        - I call them <mark>Concept Roots: √ BOOK, √ APPLE (atomic)</mark>
    - System files: internal structure (this is where aspects reside)

Pietroski's Fetch and Conjoin Semantics (2018): Internalist meanings are instructions to fetch and conjoin concepts

- Lexical roots fetch concept roots (repositories of memos)
- <mark>Categorial labels (N, V, A) *fetch* formal concepts / system files (THING, EVENTUALITY, PROPERTY) – **labels determine "internal" ontology**</mark>
- Categorised/labelled roots – "words" (e.g., book$_N$) are instructions to *conjoin* a concept root (√ BOOK) with a formal concept (THING).

Parallel architecture
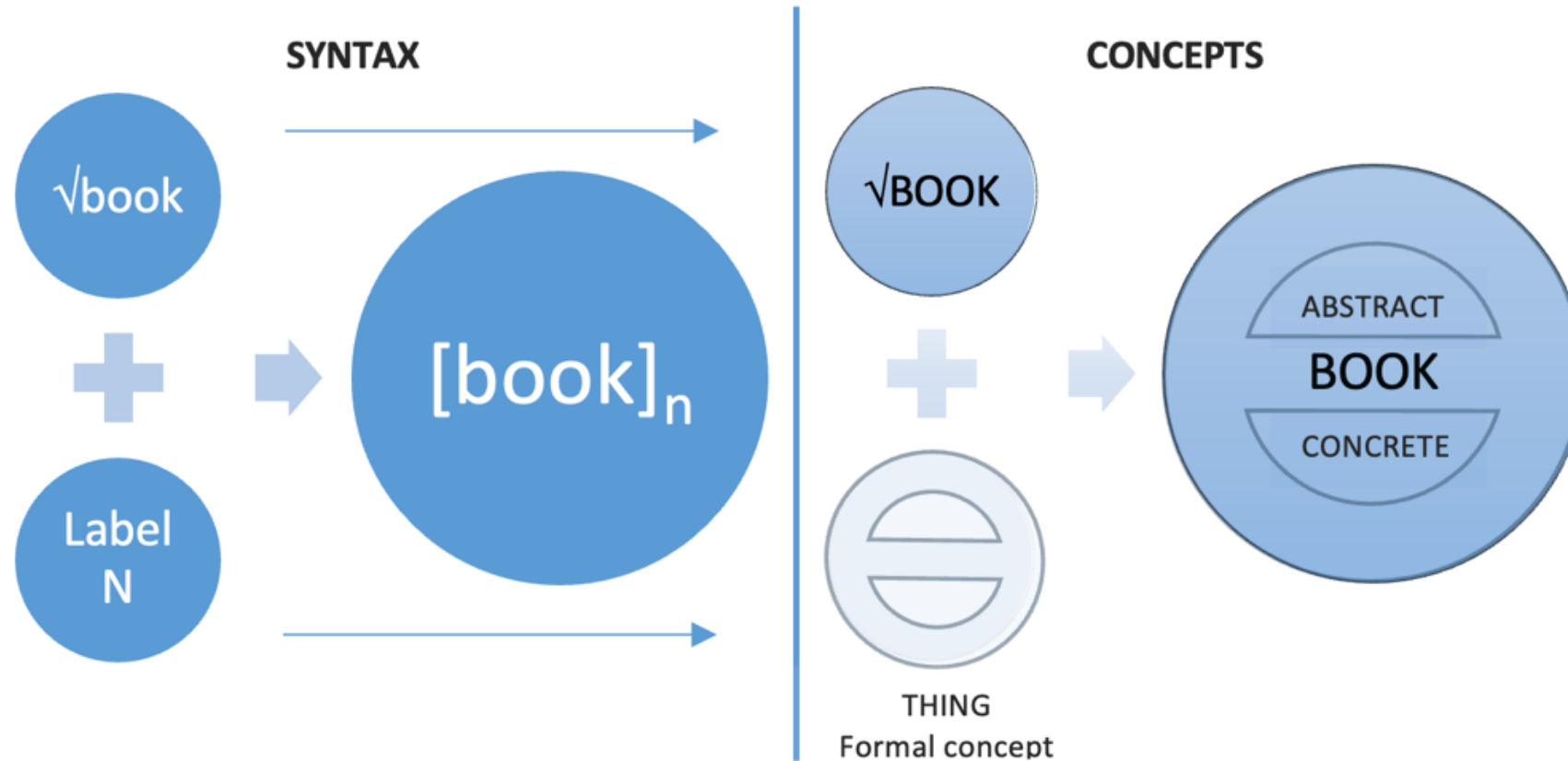
System files and aspects

- Each system file contains a bundle of universal binary features (dot-types): [+/- abstract], [+/- animate], [+/- count] etc. (cf. Chomsky 1965)
- Alternative aspects or perspectives for viewing/counting objects (internally determined ontology). How to delineate them?
    (1) Universal: Belong to human core cognition (identified through empirical research)
    (2) Incompatible metaphysical individuation and counting conditions
    (3) Dot types comprised of the binaries that give rise to a semantic anomaly in the case of non-polysemous nouns (e.g. *book* vs. *idea*, *newspaper* vs. *tree*)
- **Conjoin**:
    - What happens when a concept root is conjoined with a formal concept?
    - Its "memos" are *partitioned*:
        - the info that books fit into bags goes in the -abstract cell, the info that books are about Greek gods goes in the +abstract cell.

Explaining logical polysemy

(7) School

        a. The school went on an excursion [–abstract, +animate] (people)

        b. The school is designed by a famous architect [–abstract, –animate] (building)

        c. My son attends a Montessori school [+abstract, –animate] (education)

        d. Our school has decided against the use of electronic devices [+abstract, +animate] (institution)

(8) Lunch

        a. The lunch was delicious [–abstract, –animate] (food)

        b. The lunch was boring [+abstract, –animate] (event)

        c. #The lunch hosted a fundraising gala [+abstract, +animate] (institution?)

        d. #The lunch went on an excursion [–abstract, +animate] (people?)

(9) Idea

        a. Bob's idea is thought-provoking [+abstract, –animate]

        b. #Bob's idea weighs 4lbs [–abstract, –animate]

        c. #Bob's idea went on excursion [–abstract, +animate]

        d. #Bob's idea started a lawsuit [+abstract, +animate]

All words are logically polysemous

- Equal possibilities: as result of categorial labelling, each item of a given lexical category is assigned the exactly *same* (set of) dot types / aspects

- *School$_N$*, *lunch$_N$*, *book$_N$* as well as *idea$_N$* all have +/- abstract, +/-animate (etc) cell.

- **ALL have the same potential to be logically polysemous!**

- Why is then *book$_N$ intuitively* a "dual aspect" noun and *idea$_N$* isn't (*Bob's idea weighs 4lbs* sounds like a category mistake)? Why do we perceive those contrasts?

- The noun *school* realises [$\pm$ abstract] and [$\pm$ animate] aspects, the noun *book* [$\pm$ abstract] and [-animate], the noun *idea* [+abstract] and [-animate]

- I.e., there is some vs. no information stored in these different cells

Polysemy resolution: maximising coherence

- Polysemy resolution = maximising the information alignment between the predicate and its argument

(10) The book weighs 4lbs

  - The predicate *weighs* records no info in [+abstract] cell, hence, to maximise the information alignment (coherence), we interpret the noun *book* as [-abstract] in this predicational context.

- Type clash = lack of information alignment (zero coherence)

(11) The idea weighs 4lbs

  - The predicate *weighs* records no info in [+abstract] cell and the noun *idea* has no info in [-abstract] cell, hence no informational alignment is possible (zero coherence)

- Neutral predication

(12) The book is nice

  - The noun *book* is dual aspect and so is the predicate *nice*.
  - Equal coherence achieved on both [+abstract] and [-abstract] cells.
  - No polysemy resolution (more info needed from the extra-linguistic / discourse context)

Logical polysemy and occasion-sensitivity

(5) The leaves are green

- No unresolved polysemy in a predicational context

- But the issue in which **way** the leaves are green is not resolved

- Alternative ways (naturally green vs. painted green) are pragmatically motivated unlike alternative aspects

- Disambiguating ways: not a matter of maximising coherence but maximising goal-conduciveness (Dobler 2019, 2022)

Different types of sense alternations

Level ambiguity	Type of alternatives	Source of alternatives	Resolution (context)	Principle
Syntactic	Lexical categories	NL grammatical labels (UG)	Functional item	Grammaticality
Semantic	Incompatible types / aspects	Core cognition (UG concepts)	Open class predicate	Coherence
Pragmatic	Ways	Pragmatics	Domain goal	Goal-conduciveness

Conclusion

- **Key Takeaways:**
  - Logical polysemy is aspect-sensitivity, not occasion-sensitivity.
  - Aspects (dot-types) are universal features of conceptual UG, tied to NL UG via categorial labels.
  - Polysemy resolution is about maximizing coherence across aspects.
  - Occasion-sensitivity depends on extralinguistic, goal-driven factors.
- **Future Directions:**
  - Investigate further empirical evidence for aspect structures in system files.

Thank you for listening!