Constraints on meaning

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GLOWing lecture

Semantics

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General idea for this talk

- I was asked to address: what is relevant in semantics, for researchers in other subfields?

⇝ more in terms of the questions we can ask, relativized to subdomain:

GQ: How is meaning /are meanings constrained?[1]

- special focus on specific aspect of **GQ**, namely:

Q: Which types of structures can express which types of meanings?
(And which questions do we need to ask?)

- here: small segment of current semantic discussion (and even of semantic discussion of **Q**)
- lots of shortcuts/extreme simplifications/sloppiness
- note also: mostly not my own work

[1] Barwise & Cooper 1981, Keenan & Stavi 1986 a.m.o., cross-linguistic research, e.g. Bach et al. 1995, Matthewson 2001, 2008, Keenan & Paperno 2012, 2017, von Fintel & Matthewson 2008

I'm presupposing that our theory is informed by the observation that..

- at least some aspects of meaning linked to truth-conditions and we have implicit knowledge (intuitions) about truth conditions[2]

(1) a. SCENARIO: Animal shelter employee Abe fed 2 of the 10 dogs, then left. Me (who was watching him) to the other employees (discussing what is left to do):
b. *(Alright) Abe fed most of the dogs.* ✗

(2) a. SCENARIO: [...as above...] Abe fed 8 of the 10 dogs, then left. [...as above...]
b. *(Alright) Abe fed most of the dogs.* ✓

- and also intuitions about acceptable inferences

(3) (You (superfan) are wondering whether Timothée Chalamet owns more than two dogs. You read on a (reliable) blog...)
No Hollywood actor owns pets. NO

- structure has an impact on truth-conditions

(4) a. *A fat cat bit a thin dog.* b. *A thin cat bit a fat dog.*

[2] see Matthewson 2004 but cf. Bochnak & Matthewson 2020

First of all...

specify **Q** and situate it within bigger set of questions

Among the questions in semantics, two types of general questions:

- questions about how we combine meanings
- questions about the meanings themselves

How do we combine meanings?

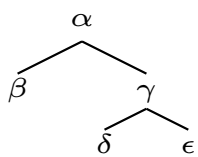
First type of question (probably more familiar to people on form side) concerns composition:

how do we derive the meanings of complex expressions

- meaning of complex expression α is a function of meanings of parts of α; some form of compositionality
- also the following assumptions are often made (but not always)

(i) strong compositionality (as far as possible)

(5)



(ii) derivation on the basis of the (independently motivated) syntactic structure

(iii) few rules of semantic composition

Some background (needed for part of the discussion)

(i) some expressions denote functions

(6) $[\![dog]\!] = \lambda x_e.x$ is a dog $\quad [\![bite]\!] = \lambda x_e.\lambda y_e.y$ bit x
$[\![every]\!] = \lambda P_{\langle e,t\rangle}.\lambda Q_{\langle e,t\rangle}.\{x : P(x) = 1\} \subseteq \{x : Q(x) = 1\}$

(ii) other expressions (arguably) denote (semantic) primitives (not functions)
(mostly) I don't think we can make meaningful claims about 'intuitions' about primitives

(7) $[\![Moe]\!]$ = Moe

- Different kinds of meanings 'sorted' into different sets
- Types (semantic categories) our labels for meanings (tell us, which kind of meanings)

(8) a. e — individual, e.g., $[\![Abe]\!]$
b. $\langle et\rangle$ — function from individuals to truth-values e.g. e.g., $[\![dog]\!]$

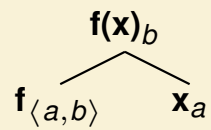
- (a lot of discussion on this issue, but, to my knowledge...) no 1-1 mapping of semantic types and syntactic category

Meanings of complex expressions? Some questions

- What are the rules of semantic composition?[3]...

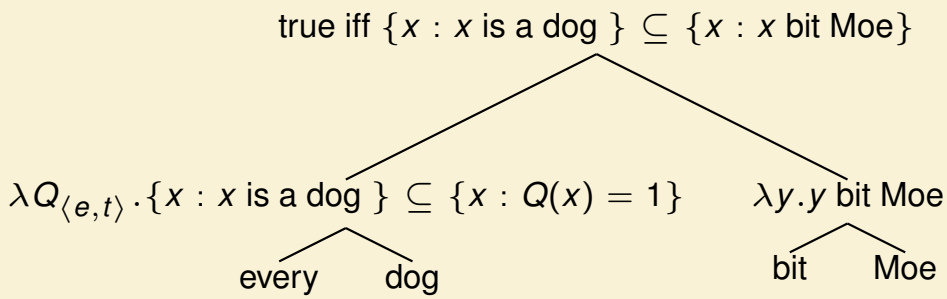
e.g., just functional application?

(9)



(10) *Every dog bit Moe*

(11)



- What is the syntactic structure that serves as our basis?

e.g., movement w/o effect on linerarization?

(12) a. *Moe bit every dog.* input to interpretation?
b. [Moe [bit [every dog]]]
c. [[every dog] [1 [Moe [bit t_1]]]]

[3] von Stechow 1991, Jacobson 2012, Heim & Kratzer 1998 a.o. for different aspects of this discussion

- But: we don't only want to know how we combine meanings, but also what meanings actually are
- for example, the meanings of some expression are functional, but what do these functions actually look like?

– which kinds of arguments do they take (which tells us what they can combine with)

(13) $[\![\textit{every}]\!] = \lambda P_{\langle e,t\rangle}.\lambda Q_{\langle e,t\rangle}.\{x : P(x) = 1\} \subseteq \{x : Q(x) = 1\}$

– or also: what does the function actually do (what does the mapping look like)?

(14) $[\![\textit{every}]\!] = \lambda P_{\langle e,t\rangle}.\lambda Q_{\langle e,t\rangle}.\{x : P(x) = 1\} \subseteq \{x : Q(x) = 1\}$

- we can (must) do this for particular expressions, but...
- we also try to generalize...

Constraints on meaning

constraints on...

- the general inventory (what meanings do we find for NL-expressions in general)
- 'relativized' inventory (what meanings do we find wrt. certain parts of the structure)

I will sketch two examples for first question (non-exhaustive list) and then turn to the second one

General inventory

- Example 1: constraints on 'compositional' part of meaning (arguments of functions): constraints on what type of functions morphemes can denote in terms of the arguments they take?

e.g., type economy?[4]

Q can morphemes express functions f that 'reconstruct' wrt. 'more complex' type what another function f' does wrt. a 'simpler' type?

- e.g., for *every* (here illustrated *qua* entire DP, point for *every* deducible)

(15) $[\![\textit{every dog}]\!] = \lambda P_{\langle et \rangle}.\forall x_e[\mathbf{dog}(x) \rightarrow P(x)]$
$\rightsquigarrow$ yields true for a given **P** (e.g. **was bitten by Moe**) iff
for each dog $x, x \in \{z : \mathbf{P}(z) = 1\}$ (set of individuals bitten by Moe)

(16) $[\![\textit{every dog}]\!] = \lambda R_{\langle e\langle et \rangle\rangle}.\lambda y_e.\forall x_e[\mathbf{dog}(x) \rightarrow R(x)(y)]$
$\rightsquigarrow$ for any given relation **R** (e.g., **bite**), a given individual **a** (e.g., **Moe**), true iff
for each dog $x, x \in \{z : \mathbf{R}(z)(\mathbf{a}) = 1\}$ (set of individuals bitten by Moe)

H No!

- constraint on inventory with direct consequences for syntax

(17) *Moe bit every dog.*

(18) a. [Moe [bit [every dog]]] b. [[every dog] [1 [Moe [bit t_1]]]]

[4] Heim 2015, 2017, Hirsch 2017 a.o.

General inventory

- Example 2: What is the range of denotations found for expressions?
- General view: an NL-expression is the input to the interpretation function (so we want to know both what the input contributes and what the function looks like)

e.g., are worlds denotations?

- Truth/falsity relative to collections of facts ('possible worlds')

  (19) *Marcel is wearing a pointy hat.*

- Certain expressions seem to manipulate worlds, so they play a role in the composition[5]

  (20) *Abe believes that Bert is a model.*

  (21) $[\![(20)]\!]$ true in our actual world w^* iff every world w' that, for Abe, is indistinguishable from w^*, is such that Bert is a model in w'

Q Do we find expressions that denote worlds?

Q Do worlds behave like denotations we have evidence for?[6]

Q Are there sentence meanings we can only derive under the assumption that there are world-denoting expressions?[7]

[5] Hintikka 1969 a.m.o.

[6] Schlenker 2006, Schmitt 2023

[7] Cresswell 1990 a.o., but cf. Percus 2000

Relativized inventory

- The other (related) question: given a particular kind of structure, which meanings can be expressed by this kind of structure?
- two ways to target this question:

1. primitive: what is the range of meanings expressible relative to a given syntactic object (i.e., a given functional category)?
2. relational (and related to first question): which kinds of meanings can be expressed by (relatively speaking) more simple structures and which kinds of meanings must be expressed by (relatively speaking) more complex structures?

- I will first sketch the first question and then turn to the second
- note: there is no big narrative to the potential generalizations I will address (because we don't have one at the moment)

1. Background

2. Semantic constraints on functional categories

3. Correlations between structural complexity and (kinds of) meanings

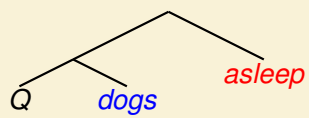
Point of departure

- observation: range of meanings for certain structures does not exhaust what is logically possible
- well-known example: constraints on quantifiers [8]

e.g., conservativity[9]

expressible as a constraint on expressions of a particular type ($\langle\langle et\rangle\langle\langle et\rangle t\rangle\rangle$) and of a particular structure (DP-internal)

(22) $\mathbf{Q} = \lambda \underbrace{\mathbf{P}}_{1st\ arg.} .\lambda \underbrace{\mathbf{R}}_{2nd\ arg.} .\mathbf{P} \underbrace{\bullet}_{set-theoretic\ rel.} \mathbf{R}$



RELATION	PARAPHRASE	ATTESTED	EXAMPLES[10]
$\mathbf{P} \subseteq \mathbf{R}$	'all dogs are sleepers'	✓	*every, all*
$\lvert\mathbf{P} \cap \mathbf{R}\rvert \geq 2$	'two dogs are sleepers'	✓	*two*
...			
$\lvert\mathbf{P}\rvert = \lvert\mathbf{R}\rvert$	'there are exactly as many dogs as sleepers'	#	
...			

(23) $\mathbf{Q}(\mathbf{P})(\mathbf{R}) \leftrightarrow \mathbf{Q}(\mathbf{P})(\mathbf{P} \cap \mathbf{R})$ generalization

[8] Barwise & Cooper 1981, Keenan & Stavi 1986 a.o.

[9] Westerstahl 1984 a.o. for exceptions, but see Herburger 1997 a.o.; Hunter & Lidz 2012, Romoli 2015 a.o for explanations

[10] constructions with these expressions seem to involve these relations at some level of representation

Plot

- I won't discuss conservativity, but I will use the general rationale: probe for gaps wrt certain parameters[11]

  – what can/cannot be lexicalized given a semantic type?

  – what can/cannot be lexicalized within a given functional syntactic category (e.g., D^0)?

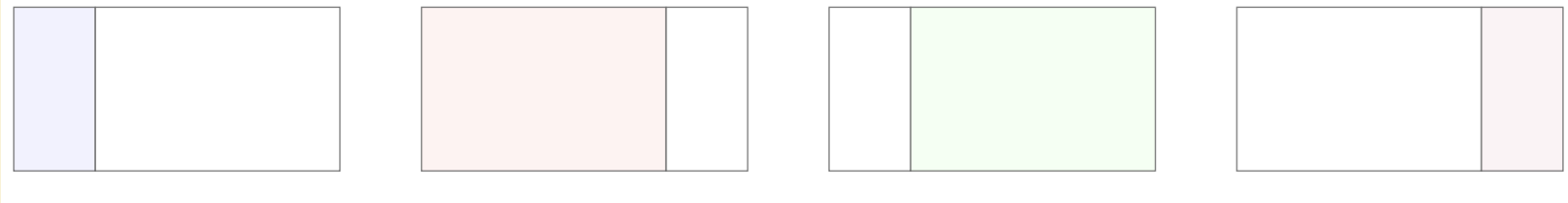
  (means we will be looking at seemingly morpho-syntactically simplex elements with the same semantic type or same syntactic distribution)
  (we will come back to the question whether what I call simplex is indeed simplex)

[11] Another more general constraint on quantifiers that I won't discuss is Chemla et al. 2019

Gaps in the paradigm

- we start by looking at constraints on (seemingly) simplex expressions of type $\langle\langle et\rangle\langle\langle et\rangle t\rangle\rangle$
- potential meanings

(24)
a. **ALL**
b. **SOME**
c. **NOT-ALL**
d. **NOT-SOME**



(I omit other potential meanings here)[12]

- cross-ling: only **ALL**, **SOME** expressed by (seemingly) simplex elements (*all/some*)[13]

(25) *Not all of the dogs are asleep.* **NOT-ALL always complex**[14]

(26) a. *You have to do no homework today.* **NOT-SOME seemingly not atomic**[15]
b. **NOT** (**MUST** (you do **SOME** homework)) (+ cross-ling. often complex realization)

(just because they correspond to complex expressions in the meta-language doesn't mean that meanings **NOT-ALL**, **NOT-SOME** are more complex than meanings **ALL**, **SOME**)

[12] see Katzir & Singh 2013
[13] Katzir & Singh 2013 a.o.
[14] Horn 1972 a.o.
[15] Jacobs 1980, Zeijlstra 2004, Penka 2011 a.o., example from Iatridou & Sichel 2011

Two expansions?

(?) seems to generalize to quantificational elements in other domains [16]

modals (quantification over worlds)

(27) a. *Abe can/may/must be in the house*
b. *Abe can't/doesn't have to be in the house*

quantification over times/events: even expressions for ALL or SOME in 'A-quantifiers' tend to be morphologically complex, often transparently contain individual quantifier[17]

- generalizes to connectives [18]

(28) a. *Abe smoked and/or drank.* **AND/OR**
b. *Abe neither smoked nor drank.* **NOT-OR**
c. *Abe didn't both smoke and drink.* **NOT-AND**

descriptive generalization (to be revised)

an atomic expression of type $\langle\langle(a)t\rangle\langle\langle(a)t\rangle(a)t\rangle\rangle$ can only express **ALL** or **SOME**, but not **NOT-ALL**, **NOT-SOME**[19]

[16] von Fintel & Matthewson 2008, Katzir & Singh 2013
[17] see e.g. Keenan & Paperno 2012, 2017 for discussion of their language sample
[18] Horn 1972, Katzir & Singh 2013, Bar-Lev & Katzir 2022 a.o.
[19] see Katzir & Singh 2013 for a more general rendering

Descriptive generalization?

- But isn't it more complicated?
- Problem 1: quantifiers, at first sight, other elements of same type

(29) *Abe fed two/three/many/few/most dogs.*

- Problem 2: some of them seem to correspond (some form of) negation of others

  (30) *Abe fed many/few dogs.*

- Parallel observation: Cross-linguistic asymmetries **MANY** v. **FEW** wrt. complexity akin (but not completely parallel) to those for **SOME** v. **NOT-SOME**[20] could suggest not simplex

(31) a. *bëri*
many

b. *bëri*-wul
many-NEG

Wolof

descriptive generalization 2 (to be revised) [21]

a simplex expression of type $\langle\langle at\rangle\langle\langle at\rangle t\rangle\rangle$ is (right) upward monotone

(32) a. *Every boy owns a crocodile.*

b. *Every boy owns a reptile.*

- what about problem 1?

[20] De Clercq 2017 for pattern and example, Penka 2011 for problems wrt split scope, Heim 2008 for negation in antonyms

[21] This presupposes the assumption that the lexical meaning of numerals is an 'at least' meaning, Horn 1972, Spector 2013 a.m.o.

What happens if we take a more fine-grained view?

- But: not all of elements we took to be of the same type are (necessarily) of the same type[22]
- Numerals/cardinals not in same semantic category as *some/all* ('adjectival' behavior)?[23]

(33) *The two boys are asleep.*

- *most* decomposable into cardinal (*many*) and superlative?[24]
- semantic distinctions btw. cardinals (*many*) and numerals could suggest type differences[25]
  (I omit discussion of potential link to cross-categorial status of cardinals v numerals)

(34) semantic type *a*: { *all*, *some* } (I will get to *every* v. *all* later)
semantic type *b*: { *many...,* }
semantic type *c*: { *one, two, three,...,* }

⇒ in case at hand, semantic differences seem to correlate with differences in syntactic behavior (category)

(35) syntactic category *X*: { *all*, *some* }
syntactic category *Y*: { *many...,* }
syntactic category *Z*: { *one, two, three,...,* }

[22] see Katzir & Singh 2013 for parallel discussion
[23] Link 1983, Hoeksema 1983, Landman 2004, Bale et al. 2011, Solt 2009, 2015 a.o.
[24] Hackl 2009 a.o.
[25] Solt 2009, 2015 for discussion and example, e.g. Wagiel & Caha 2020 for even more fine-grained view

So....

(36) syntactic category X: { *all*, *some* }
syntactic category Y: { *many...*, }
syntactic category Z: { *one, two, three,...*, }

- Given this very small sample, can we make a general hypothesis regarding the semantic constraints on elements lexicalized in a given functional category F?

Strong (descriptive) hypothesis, informal

For any functional (syntactic) category (head?) F, the set of elements expressible in F is totally ordered by (type-generalized) entailment (e.g. *three* $>$ *two*; $a > b$ '$[\![a]\!]$ g-entails $[\![b]\!]$)

Extendable?

- How do we extend this to categories like tense, NUM, PERSON etc.,
- For NUM at least one view holds that we have only 'more restrictive' and 'less restrictive' elements in the paradigm[26]
- e.g., for binary number system (simplified)

(37) a. ⟦PL⟧ is the identity function (i.e., ⟦PL⟧(**X**) = **X**)
b. ⟦SG⟧ is the restricted identity function (i.e., ⟦SG⟧(**X**) yields value only if **X** is atomic (or every element of **X** is atomic), if **X** passes this test, then ⟦SG⟧(**X**) = **X**[27]

Strong (descriptive) hypothesis, informal

For any functional (syntactic) category (head?) *F*, the set of elements expressible in *F* is totally ordered by (type-generalized) 'restrictiveness' (wrt truth/definedness)

- to my knowledge, not posited (probably with good reason, various immediate problems)[28]
- but: generalizations of this type would give rise to a number of potentially interesting questions

[26] slightly different views in Sauerland 2003, Sauerland et al. 2005, Spector 2007, Sauerland 2008 v. e.g. Farkas & de Swart 2010, Bale et al. 2011, Marušic et al. 2020

[27] exact formulation depends on where we locate NUM in the structure

[28] unclear whether it extends to PERSON, tense, aspect, prepositions...

Questions raised

(i) role of competition in terms of 'restrictiveness' in structuring conceptual space (old idea)?[29]

using expression with more general meaning will trigger (implicit) inferences about not having used expression with more restrictive meaning (very sloppy)

(38) *Abe could be in jail.* $\rightsquigarrow$ **not (Abe must be in jail)**

- predicts effect of absence of elements with more restrictive meanings within paradigm[30]

(39) 'inéhne-**no'qa** 'ee kii lepí cíickan
take-MOD you DEM two blanket
a. You can take these two blankets
b. You should take these two blankets. Nez Perce

$\Rightarrow$ could suggest competition in terms of restrictiveness 'deep' organizing principle of lexicon (governs how expressed meanings in paradigm *F* seem to 'cut up' *F*'s conceptual space)[31]

[29] Horn 1972, Heim 1991, Sauerland 2002 a.m.o. for various aspects of this within semantics

[30] Deal 2011, Cable 2017 for modals (see also Matthewson 2016), Davidson 2013, Bowler 2014, Singh et al. 2016 for connectives (but see Haslinger & Schmitt 2019 for connectives, Breheny et al. 2018 for general reasoning)

[31] Issue probably more complex in terms of what elements we compete with

Questions raised

(ii) what governs which contrasts within the paradigm can be neutralized and which cannot?

- very common in languages that existential and universal quantification over individuals formally distinguished[32]
- common in languages that SG-PL contrast not formally distinguished[33]
- both ordered wrt restrictiveness

? How do we account for this distinction?

– Descriptively (i.e., does the +/- neutralization option correlate with semantic properties (contribution to presuppositional v. assertive content); or with certain syntactic properties)?

– within syntactic theory (difference in representations that prevents identical spell-out in existential v. universal quantifiers)?

(question distinct from another one I omit here concerning gaps within ordered set, e.g„ why we seem to find only universal monomorphemic attitudes or universal floated quantifiers[34]

[32] see overview in Keenan & Paperno 2012, 2017

[33] Corbett 2000 a.m.o.

[34] see Zimmermann 2002, Fitzpatrick 2006 for discussion

(iii) how do we explain what lexicalized?

- total ordering requirement *per se* would not tell us which elements are expressed (would only tell us sth. about their relation to one another)
  (neither does assumption that elements derivable via 'reasoning' in paradigm)[35]
- if we have a general constraint of this type, how do explanations for what is expressed wrt to a particular category carry over to the general case?
- do (different) explanations for simplex status of connectives **AND**, **OR** v. e.g. **NOT-AND**, **NOT-OR**)[36] carry over to other functional categories? [37]
- e.g., relevant factor tied to addressing questions[38]: **AND**, **OR**, combined with (independently motivated) strengthening mechanisms better than **NOT-AND**, **NOT-OR** (and others) to convey belief-state of speaker wrt (complete) answer

(40) *Who is asleep?* { **Ada, Bea, Carl** }

(41)
a. **A is asleep** & **B is not asleep** & **C is not asleep**
b. **A is not asleep** & **B is asleep** & **C is not asleep**
c. **A is not asleep** & **B is not asleep** & **C is not asleep**
d. **A is asleep** & **B is asleep** & **C is not asleep**
e. ....
f. **A is asleep** & **B is asleep** & **C is asleep**

(42) *Ada is asleep and Bea is asleep* *Ada is asleep or Bea is asleep*

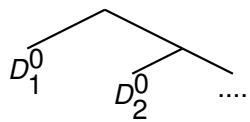
[35] see Horn 1972 for original claim, Katzir & Singh 2013 a.o. for point
[36] recently Uegaki 2022, Züfle & Katzir 2022, Bar-Lev & Katzir 2022, 2023
[37] Analogously for other potential explanations, e.g. Bott et al. 2018, Agmon et al. 2019 for monotoncity, relatedly Aloni 2023
[38] proposal by Bar-Lev & Katzir 2023, very simplified rendering here

But: how do we get to a plausible generalization?

- simplified view of 'functional category': if we have a more fine-grained view of syntactic categories, what are our generalizations about (how do we get to non-trivial statements, i.e., how do we delimit relevant 'portions' of the structure)?

  How does order wrt. entailment map to order wrt hierarchical positions?[39]

  (43)



- (relatedly) notion of atomicity? Further decomposition of elements I took to be 'atomic' elements of category possible?
- (relatedly) the discussion was completely silent in terms of cross-linguistic asymmetries in complexity beyond our notion of atomicity [40]

  (44) a. **NOT-SOME** $\Rightarrow$ lexicalized in several languages (e.g., Engl. *no*)
  b. **NOT-ALL** $\Rightarrow$ not lexicalized in (?) any language

[39] competition also wrt.**less complex** structures, as in Katzir 2007, Fox & Katzir 2011

[40] Katzir & Singh 2013, Bar-Lev & Katzir 2023 a.o.

So...

- While I think we should target such generalizations, I don't know how to really go about it
- in the following, we will look at one aspect of our discussion more closely

1. Background

2. Semantic constraints on functional categories

3. Correlations between structural complexity and (kinds of) meanings

The question

- observed: for quantifiers (and arguably cardinals): complexity asymmetries

e.g., **ALL**, **SOME** have less complex spell-outs than **NOT-ALL**, **NOT-SOME**

- **NOT-ALL** clearly morphosyntactically more complex than **ALL** across-languages
- **NOT-SOME** more complex than **SOME**: cross-linguistic implication wrt complexity, evidence from LF-splits in languages that seem to have mono-morphemic **NOT-SOME**

(45) [α] v. [$\mu\ \alpha$]

- rather than directly indicative of inventory per functional category, indicative of which meanings 'need more/less work' to be expressed
- we can generalize this question, correlating pairs of formally less/more marked patterns (proper morpho-syntactic containment) with different meanings

(46) [α] v. [$\mu\ \alpha$] α doesn't have to be morpho-syntactically simplex

underlying question

Generalization wrt. which kinds of meanings require complex structures (and which don't)?
If so, explanation?

Example

- I will briefly address this question, probing differences between meanings we haven't considered so far

H (often implicit): NL makes use of of elements corresponding to elements in classical propositional logic, classical (1st order) predicate logic, and these elements correspond to simplex (or relatively simple) expressions

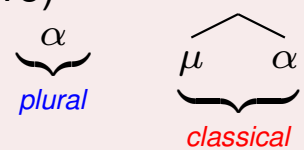
  - connectives $\wedge$, $\vee$
  - quantifiers $\forall$, $\exists$

- this was also my tacit assumption above: e.g., I assumed that *and* etc. (our 'simple' expressions) have classical meanings (which I represented by **AND** etc.

general point which the following sketch relates to

for universal domain (conjunction, universal quantification over individuals) H not tenable[41]:

(i) classical meanings not simplex (require more complex structure)
(ii) (relatively) more simple structures have a plural meaning



I will only sketch the case for conjunction[42]

[41] Flor et al. 2017a,b, Haslinger et al. 2019, Dočekal et al. in prep.

[42] Flor et al. 2017a,b, Haslinger et al. 2019, Dočekal et al. in prep., for universal quantifiers see Haslinger et al. 2023

Conjunction

- classical distributive ('intersective') hypothesis: conjunction morphology COORD in sentential conjunction corresponds to $\wedge$ from classical propositional logic

(47) *Ada danced* ***and*** *Bea sang.* $[\![and]\!]_{\langle\langle t,t\rangle,t\rangle} = \lambda p_t.\lambda q_t.p \wedge q$

- meaning for other types ending in *t* recursively derived[43][44]

(48) *Ada and Bea* $[\![[\uparrow Ada]\ [\text{COORD}_{\wedge}\ [\uparrow Bea]]]\!] = \lambda P_{\langle et\rangle}.P(\textbf{ada}) \wedge P(\textbf{bea})$

- Alternative hypothesis: plural (non-classical meaning) for COORD:[45]

  (49) $[\![[\ Ada\ [\text{COORD}_{+}\ Bea\ ]]\!] = \textbf{ada} + \textbf{bea}$

[43] Partee & Rooth 1983, Winter 2001 a.o.

[44] $\uparrow$ – takes individuals to generalized quantifier correlates

[45] Link 1983 a.o. for individuals, Link 1984, Krifka 1990, Schmitt 2013 a.o. for various logical types

Different predictions

(50)
a. *Ada and Bea fed exactly two cats.* — individual conjunction
b. Each of Ada and Bea fed exactly two cats. — distributive reading
c. Ada and Bea fed exactly two cats in total. — cumulative reading

1. classical hypothesis: distributive reading reflects the basic meaning of COORD, cumulative reading requires extra morphology[46]
2. plural hypothesis: cumulative reading reflects the basic meaning of COORD, distributive reading requires extra morphology [47]

- one of the two hypotheses cross-linguistically valid (test via cross-linguistic asymmetries)?

1. classical: more morpho-syntactic complexity' should correlate with the cumulative reading
1. plural: more morpho-syntactic complexity' should correlate with the distributive reading

- tested with the relevant minimal pairs[48], speaker judgments relative to scenarios (33 languages, 13 families in total)[49]

[46] see Winter 2001 a.o.

[47] Link 1987 a.o.

[48] relativized to independent properties of the predicate which provides an extra source of distributivity, Flor et al. 2017a, Haslinger et al. 2021

[49] Flor et al. 2017a,b, Haslinger et al. 2019, Dočekal et al. in prep., *terraling.com/groups/20, terraling.com/groups/8*

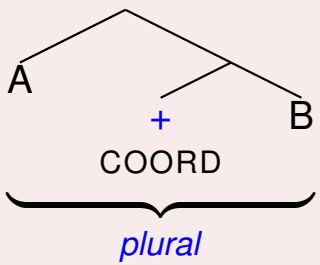
Results

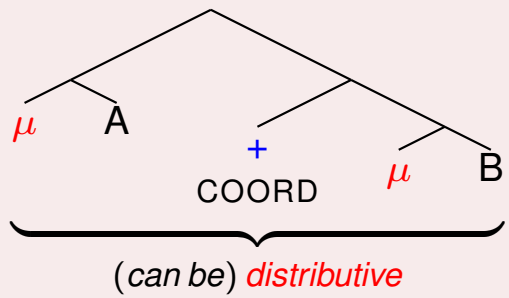
- directly support plural hypothesis and contradict classical hypothesis (extra morphology never adds cumulative reading, but can limit sentence to distributive reading)

⇒ simpler structures (COORD do not have classical meaning but rather plural meaning

- only more complex structures seem to be able to express classical (distributive) meaning

(51)





preliminary sample for functional types (mainly VP-predicate conjunction): 13 languages (5 major language families) also supports plural hypothesis[50]

[50] Haslinger et al. 2019, *http://terraling.com/groups/8*

Two questions

⇒ For universals, clear semantic contrast that correlates with more/less complexity.

- regular complexity asymmetries also in other 'parts' of the language, e.g., existentials/disjunction

(52) *What's that noise in there?*
  a. *Abe is dancing on the table or throwing bottles at the host.*
  b. *Abe is either dancing on the table or throwing bottles at the host.*

? Semantic contrast that correlates with such complexity asymmetries? If so, which?[51]

- question extends to other cross-linguistically wide-spread complexity asymmetries, e.g. non-reduplicated v. reduplicated forms...[52]

⇒ we observed: plurals have less complex structures than 'classical' universals

? explanation?

[51] in particular Nicolae et al. 2023, also Mauri 2008, but see also Spector 2014, Haslinger 2023

[52] concrete proposals for individual languages and individual phenomena (e.g., numeral reduplication, Balusu 2006 a.o.), but no general picture (except for informal intuitions in the older typological literature)

Role of questions/issues

- no direct explanation, but indication that contrast might be linked (on abstract level) to sth. we have seen before: that utterances address questions (or 'issues')[53]
- underlying intuition[54]: more/less imprecision is a relevant parameter of competition between expressions that is indirectly related to complexity
- for our purposes: translate 'imprecision' as how dependent an expression is on underlying question (how truth-conditions seem to 'fluctuate' when considered wrt different questions)
- (some) plural expressions exhibit more imprecision than quantificational expressions[55]

(53) a. *The switches are on.*
b. *All the switches are on.*

(54) CONTEXT: Abe and Bert installed 10 light switches, but made an error that might lead to an electrical fire. As their shift has already ended, they don't have time to fix the problem right away and decide to leave... They know there is a risk of a fire if all 10 switches are on at the same time. Abe realized he left two of the switches on. (53-a) ✗, (53-b) ✗

(55) CONTEXT: [as first part in (54)...] ...They know there is a risk of a fire of any of the switches are on. Abe realized he left two of the switches on. (53-a) ✓, (53-b) ✗

[53] see Bar-Lev & Katzir 2023 for discussion above

[54] the idea I present here in a very simplified form is from Haslinger 2023

[55] Brisson 1998, 2000 for relevant data, Malamud 2012, Križ 2016, 2015, Križ & Spector 2021, Bar-Lev 2020 for relation to question, Haslinger 2023 for generalization tied to present discussion

- very roughly: increase in degree of imprecision of an expression correlates with putting fewer constraints on what can be the question
- if one of the 'goals' is to reign in the underlying question, we should avoid imprecison: 'manner'[56] related competition, very roughly: less imprecision 'better' than more imprecision
- so the only way for an imprecise expression to 'survive' against a competitor is if it is 'better' relative to another parameter of competition – such as morpho-syntactic complexity

(56)	a.	*The switches are on.*	imprecision: loser, complexity: winner
	b.	*All the switches are on.*	imprecision: winner, complexity: loser

- our complexity asymmetries – which I said correlated with 'classical' v. 'non-classical (plural)' meanings – could thus be part of this more general pattern[57]

[56] Grice 1975, Rett 2020 a.o. for maxim of manner, Haslinger 2023 for point that imprecision is a relevant parameter

[57] see Haslinger 2023 for this point, but we would have to say more about 'distributive' v. 'non-distributive' (plural) universal quantifiers

In conclusion

- Underlying question:

GQ: How is meaning /are meanings constrained?
Q: Which types of structures can express which types of meanings?

- very rough sketch of: what can we say/ should we ask in relation to:

1. primitive: what is the range of meanings expressible relative to a given syntactic object (i.e., a given functional category)?
2. relational (and related to first question): which kinds of meanings can be expressed by (relatively speaking) more simple structures and which kinds of meanings must be expressed by (relatively speaking) more complex structures?

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