Disembodied or phonetically null operators

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Carlson (1983, 2006) observes that functional elements often present mismatches in form and interpretation that lexical elements do not.

- John wrote a paper because he had to [write/*wrote a paper]
- Caesar in Italiam contendit duasque ibi legiones conscribit
  Caesar in Italy reached two-and here legions enrolled
- he ne sealde nanum nytene ne nanum fisce nane sawle
  he not gave none beasts not none fish none souls
  `and he did not give beasts or fish souls'
- these doors vs. These have wooden doors.

Carlson 2006. 'Mismatches' of form and interpretation. van Geenhoven, ed., *Semantics in Acquisition*, pp. 19–36. Berlin: de Gruyter.

Carlson argues that there's a learning problem if the learner is supposed to figure out functional meanings from what he/she hears.

- He proposes that functional elements themselves are meaningless.
- Functional meanings are carried by features or phonetically null operators that appear on the phrases over which they scope, and their effects percolate down to heads in order to receive expression, in one way or another.
- Pretty radical for 1983!

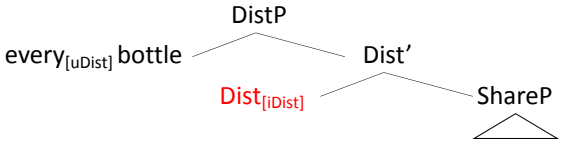
Results in the past decades converge with Carlson's proposal

- A sampler will follow (reminders only). Note that these are not vanilla cases of scope/surface mismatch that are handled with Quantifier Raising.
- It seems that for the logical scaffolding to be phonetically null or to be even disembodied is almost the norm.
- If so, careful consideration of compositionality / learnability is called for. We do not currently have rules for the game. Some questions will be raised.

+/- Syntactic status

- Some of the silent operators have syntactic status: bind variables, check features, apply recursively, or have a spot in the clausal spine.
  PAST, Dist, Op¬, AltShift, Exh, O
- Some only/mainly make a semantic contribution.
  ∩, ∪, ¬
- Some may be in-between.
  type-shifters Lift, BE, THE, **z**, etc.

Beghelli & Stowell on distributivity



every$_{[uDist]}$ bottle $f_{CH}(Pow([[bottle]]))$
with f contextually given, possibly skolemized

Dist$_{[iDist]}$ $\lambda P \lambda Q \forall x\, [x \in P]\, [Qx]$

Beghelli & Stowell 1997. Distributivity and negation. *Ways of Scope Taking* 71-109.
Szabolcsi 2010. *Quantification* (p. 190). CUP.

Kratzer on indefinite series

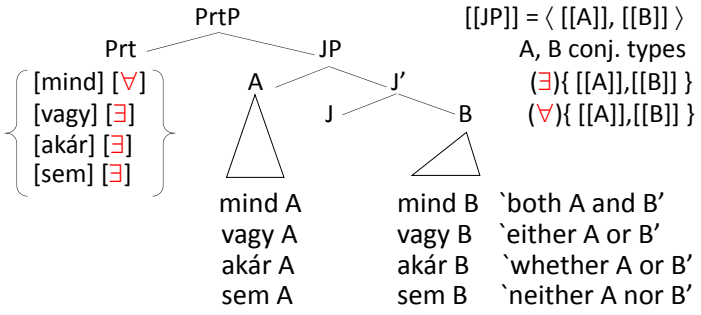
	Interrogative	**kaut**-series	**ne**-series	**jeb**-series
person	**kas**	**kaut kas, kads**	**ne-viens**	**jeb-kads**
thing	**kas**	**kaut kas**	**ne-kas**	**jeb-kas**
place	**kur**	**kaut kur**	**ne-kur**	**jeb-kur**
time	**kad**	**kaut kad**	**ne-kad**	**jeb-kad**
manner	**ka**	**kaut ka**	**ne-ka**	
determiner	**kads, kurs**	**kaut kads**	**ne-kads**	**jeb-kads, jeb-kurs**

That speakers of Latvian, German, or Spanish ... perceive the pronouns and determiners of the *kaut-*, *irgendein* or *algun* series as existentials would no longer mean that those expressions are ... existentials. Their existential look would be the overt expression of syntactic agreement with propositional [∃], the true carrier of existential force. Those indefinites might have an uninterpretable but pronounced [∃] feature, then, that must enter an agreement relation with a[n]... interpretable feature that happens to be unpronounced.

Kratzer 2005. Indefinites and the operators they depend on: From Japanese to Salish. Carlson & Pelletier, eds., *Reference and Quantification.*

Szabolcsi on strictly tuple constructions

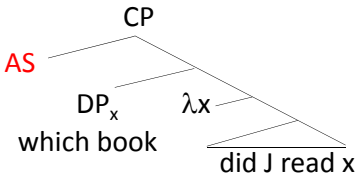
à la Kratzer 2005



Szabolcsi 2017. Two types of quantifier particles: Quantifier-phrase internal vs. heads on the clausal spine. Submitted.

Kotek on ALT[ernatives]SHIFT[er]

ALTSHIFT (AS) sits on the clausal spine and is the source of interrogative semantics. It takes a set of (sets of) propositions and returns the focus-semantic value of that set as the ordinary value of the question.



$[[\text{AS } \alpha_\sigma]]^o = [[\alpha_\sigma]]^f$

$[[\text{AS } \alpha_\sigma]]^f = \{ [[\text{AS } \alpha_\sigma]]^o \}$

$\sigma \in \{ \langle st,t\rangle, \langle\langle st,t\rangle,t\rangle, \ldots \}$

Kotek 2016. On the semantics of wh-questions. *Proc. of Sinn und Bedeutung* 20.

Ladusaw on English negative concord

When the feature [neg] occurs on clausal nodes, it will trigger the application of a propositional negation operator to the propositional interpretation of the clause otherwise determined by the composition principles. By our definition then, it is the feature [neg] which expresses negation, not the lexical category which introduces it. It follows from these assumptions that any clause whose head bears the feature [neg] will be interpreted as negated... [neg] is also affected by the principle (·), akin to the Control-Agreement Principle: A category inherits the feature [neg] from a specifier sister or an adjoined sister.

Ladusaw 1992. Expressing negation. *SALT 2*.

Zeijlstra on negative concord

It. Gianni non [iN] ¬ ha telefonato
Gianni non [iN] ¬ ha telefonato a nessuno [uN]
Op [iN] ¬ nessuno [uN] ha telefonato
Op [iN] ¬ nessuno [uN] ha telefonato a nessuno [uN]

Rus. Op [iN] ¬ Ivan ne [uN] pozvonil
Op [iN] ¬ Ivan nikomu [uN] ne [uN] pozvonil
Op [iN] ¬ nikto [uN] ne[uN] pozvonil
Op [iN] ¬ nikto [uN] nikomu [uN] ne[uN] pozvonil

Zeijlstra 2004. *Sentential Negation and Negative Concord*. UvA.

Chierchia on an abstract ¬ operator

The main peculiarity of N-words is that they can support an abstract form of negation $NEG_{[n\text{-}D]}$. I assume that NEG is a functional head governed by the following axioms:

$NEG_{[n\text{-}D]}$ must

i. co-occur with a C-commanding contentful, abstract negative operator ¬ (adjoined to NEG's projection);

ii. enter into an agreement relation in its Spec position with $DP_{[n\text{-}D]}$.

O_{ALT} ¬ [Nessuno$_{[n\text{-}D]}$ $NEG_{[n\text{-}D]}$ ha telefonato]

Chierchia 2013. *Logic in Grammar.* OUP.

Fox on (recursive) Exh

The syntax of natural language has a covert operator which is optionally appended to sentences, and this operator is responsible for Scalar Implicatures.

Crucially, (·) is consistent with the free choice possibility, ◊p∧◊q, though it, of course, doesn't assert free choice. ... Ignorance might seem implausible, and the hearer might employ the parsing strategy again:

Exh(C')(Exh(C)(◊(p∨q))) = ◊(p∨q) ∧ ¬◊(p∧q) and ¬(◊p∧¬◊q) and ¬(◊q∧¬◊p) = ◊p ∧ ◊q and ¬◊(p∧q)

Fox 2007. Free choice and the theory of scalar implicatures. Sauerland et al. eds., *Presupposition and Implicature in Compositional semantics.*

Chierchia on exhaustifier **O**

a. $||\text{Nessuno}_{[[n\text{-}D]}||$ = λP ∃x∈D [person(x) ∧ P(x)]

b. $||\text{Nessuno}_{[[n\text{-}D]}||^{ALT}$ = {λP ∃x∈D [person(x) ∧ n(x) ∧ P(x)]: D'⊆D ∧ n∈Num}

c. [[n-D]] is checked by O_{ALT}

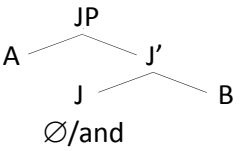
d. Example: O_{ALT} [pro non ho visto $\text{nessuno}_{[[n\text{-}D]}$]

O_{ALT} is required in this structure to check *nessuno*'s unvalued feature [[n-D]]. Negation is required for semantic coherence; without it, exhaustification would be contradictory.

Chierchia 2013. *Logic in Grammar.* OUP.

Winter on default disembodied ∩

den Dikken 2006 meets Winter 1995:



J for Junction

JP interpreted as a mere pair ⟨ [[A]], [[B]] ⟩.
Optional, default next step: [[A]] ∩ [[B]].
∩ is a "disembodied" operation.

den Dikken 2006. EITHER-float and the syntax of co-OR-dination. *NLLT* 24.
Winter 1995. Syncategorematic conjunction and structured meanings. *SALT 5.*

Szabolcsi on disembodied ∩ and ∪

- $[_{JP}$ *A* $[_{J'}$ J *B*]] interpreted as ⟨ [[A]], [[B]] ⟩.
  Optional, default next step: [[A]] ∩ [[B]].
- KA particles (in disjunction, question, indefinites, etc.) override the default by introducing a presupposition,

  [[Host]] asymmetrically entails host's immediate context (imm. context has additional possibilities).
  Requires [[A]] ∪ [[B]] interpretation.

Szabolcsi 2015. What do quantifier particles do? *L&P* 38: 159-204.

Particles carry pre[post]-supposition, demand ∪

KA particles carry the pre[post]-supposition,
Host [[A]] asymmetrically entails A's immed. context.
Satisfied if the immediate context is [[A]] ∪ [[B]].

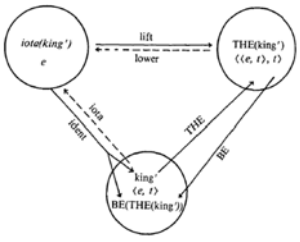
hyaku-nin-**toka**	Taroo-ga hon-o kaimasita **ka**?
100-classifier-TOKA	Taroo-nom book-acc bought.pol. Q
`some 100'	`Did Taroo buy a book?'

Kannada iterated, non-exhaustive disjunction

ii hotel-nalli uuTa-n**oo** tinDi-n**oo** yeenaadru sigutte.
this hotel-loc meals or snacks or anything will-find
'At this hotel meals or snacks or such things are available'

Amritavalli 2003: (17a)

Partee on type-shifters Lift, BE, THE, etc.



Jacobson on binding combinator **z**

z = λfλhλx[f(hx)(x)]

z-saw' = λfλhλx[f(hx)(x)](saw') = λhλx[saw'(hx)(x)]

z-saw(his_dog)' = λhλx[saw'(hx)(x)](λy[the-dog-of'(y)])
= λx[saw'(the-dog-of'(x))(x)]

Partee 1987. Noun Phrase interpretation and type-shifting principles.
Jacobson 1999. Towards a variable-free semantics. *L&P 22*: 117-184.

Null/disembodied	Overt counterpart?
¬	***not, niet, non***
∩	***and***
∪	***or***
∃	gray area
∀	
Exh(Exh), O	***only***
AltShift	
BE, THE	***be, the***
binding **z**	
PAST, Gen, ◊, □, ...?	

Zeijlstra on learning algorithm for covert Ops

1. Assume 1:1 correspondence between morpho-syntactic M and semantic content S.

2. If some M manifests the presence of semantic content S, but cannot be the carrier of S, assign [uF] to M.

3. Assign [iF] to all M that introduce the semantic context manifested by [uF]. Postulate covert Op if needed.

4. Assign [iF] to all M that are responsible for the rest of the grammatical occurrences of [uF] (even if they don't really have S semantics).

A covert Op may only be postulated if the grammaticality of a sentence cannot otherwise be accounted for.

Covert checker of [uF] must have proper semantic content S.

Zeijlstra 2014. On the uninterpretability of interpretable features. *Minimalism and beyond. Amsterdam: John Benjamins*, pp.109-129.

What legitimates disembodied operators?

Averting L-triviality (¬)
Default interpretation (∩)
Satisfying presupposition (∪)
Filling a language-specific gap (BE, THE)

Sheer semantic need (**z** for binding, lift, AltShift)

...?... (PAST, Gen, ◊, □, etc.)

Lessons from the type-shifting literature?

Chierchia on type shifting as last resort

Blocking Principle
For any type shifting operation τ and any X:
* τ(X)
if there is a determiner D such that for any set X in its domain, D(X) = τ(X).

English has *the* interpreted as ι, and *a(n)* interpreted as ∃. This leaves ∩ (property to individual correlate) as the only option English can use in a covert way.

¬ and *non*?

Chierchia 1998. Reference to kinds across languages. *NLS* 6: 339-405.

Partee & Rooth on lifting vs. lowest types

(i) Enter each verb lexically in its minimal type.
(ii) Lexical rules furnish "higher"-type homonyms.
(iii) Processing strategy: Higher-type homonyms only when needed for type coherence (e.g. *need and buy a new coat*).

• (iii) undergenerates – and "flip-flop" overgenerates:

The dept. is looking for a phonologist or a phonetician
OK `... but I don't know which'
Mary indicated that every student failed or got a D
`indicated that every st. failed or every st. got a D'
OK `ind. that every st. failed or ind. that every st. got a D'

Partee & Rooth 1983. Generalized conjunction and type ambiguity.

More questions

- What (kind of) operators are never disembodied?
- In what positions do null/disembodied ops occur?
- Are null/disembodied ops subject to "no crossing" as non-variable-binding operators (heads)?
- Are the rules different for these operators than for overt functional elements?