Minimizer negative polarity items in non-negative contexts

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Introduction

- Minimizer NPIs: *lift a finger*, *drink a drop*, ...
- Canonical observation: More restricted in occurrence than weak NPIs (*ever*, *any*):
  - Strong licensing contexts: *not*, *noone*
  - Weak licensing contexts: *few*

(1) a. Alex didn't lift a finger to help.

b. Noone lifted a finger to help.

c. * Few students lifted a finger to help.

(2) a. Alex didn't do anything to help.

b. Noone did anything to help.

c. Few students did anything to help.

Classical view: Concentric, homogeneous licensing

- Licensing contexts are ordered in concentric circles:
  antimorphic ⊂ anti-additive ⊂ downward-entailing ⊂ non-veridical
  not *noone*, *few. ...* interrogative, ...
  [*every* N], ...
- Licensing is homogeneous: if an NPI can occur in a context of strength *i*, it can occur in all contexts of strength *i* or stronger.
- But: Hoeksema (2013): Counterexamples to concentric, homogeneous licensing
- Here: Minimizers

Outline

Data considered:

- Restrictor of universal quantifier
- Two types of affirmative sentences

Restrictor of a universal quantifier

- Linebarger (1980), Heim (1984)
- Restrictor of a universal quantifier is anti-additive, just as scope of *noone*.
- Minimizers are licensed in non-episodic, law-like universal statements, but not in episodic universals

(3) [Every restaurant that charges so much as a dime for iceberg lettuce]

a. ought to be closed down.

b. ?? actually has four stars in the handbook.

(4) [Every restaurant that I have ever gone to] happens to have four stars in the handbook.

⇒ No homogeneous licensing behavior in anti-additive contexts.

Affirmative sentences 1

- Sedivy (1990)
- Minimizer ok if there is a contextually salient negative "side message"
- However, weak NPIs are not!

(5) A: I am disappointed that you don't give a damn about my problems.

B: But I DO give a damn.

Side message: It is not true that [I don't give a damn].

(6) A: I don't think Bert ever kissed Marilyn Monroe.

B: * Bert DID ever kiss Marilyn Monroe.

Side message: It is not true that [Bert didn't ever kiss M.M.].

Affirmative sentences 2

(7) John (really) should have lifted a finger to help Mary clean up.
Side message: John didn't lift a finger ...

(8) * John (really) should have eaten any cake.
Side message: John didn't eat any cake.

⇒ No concentric licensing behavior.

Theories of NPI licencsing

- Entailment-based approaches (Ladusaw, 1980; Giannakidou, 1998): Assume homogenous, concentric behavior
- Scalar approach (Krifka, 1995; Eckardt, 2001; Eckardt & Csipak, 2013): NPIs are used for statements stronger than their alternatives. Minimizers come with non-veridicality assumption ⇒ not compatible with denial contexts.
- Representational approach (Sailer, 2007, 2009): NPIs licensed in the scope of some operators; shares concentricity assumption
- LF-representational approach (Linebarger, 1980, 1987): NPIs licensed in the LF of a clause or in the LF of a *Negative Implicatum* (NI). But: NI used for weak NPIs under weak licensors.

Summary

- Minimizers occur in negated sentences, in some other NPI-licensing contexts and in some cases with negative "side message".
- Minimizers in non-negative contexts pose a severe problem to theories of NPI licensing.
- Sedivy (1990): Two types of licensing needed, but not exactly as in Linebarger's work:
  - Type 1 licensing: only with respect to the semantics of the sentence.
  - Type 2 licensing: also with respect to some inferred statement.
- Plan for today: Modify representational theory to include "side messages".

Basic idea

Semantic representation of a sentence contains more than its core, primary truth conditional content, though the two are distinguishable.

- Homer (2008): "plain meaning" plus a conjunction of its presuppositions.
- Potts (2005): at-issue meaning plus a conjunction of its Conventional Implicatures (CIs) at utterance level
- Discourse Representation Theory (DRT, Kamp et al. (2011)): preliminary representation, expanded through anaphora resolution and presupposition accommodation (van der Sandt, 1992).
- AnderBois et al. (2015): Interaction of at-issue and non-at-issue content with respect to anaphora and presuppositions.

Two relevant constellations

- Contrastive use of auxiliaries

  (9) I DO give a damn.

- Irrealis modals

  (10) John should have lifted a finger to help Mary.

Critical construction 1: Contrastive use of auxiliaries

- Sedivy (1990, 98): Constrastively used auxiliaries licens strong NPIs. There must be the "denial of a negative presupposition."

  (11) a. I DO give a damn.

  b. It is not true that [I don't give a damn].

- Gutzmann et al. (2020): **VERUM**
  - Only use-conditional semantic contribution.
  - $[\![\textbf{VERUM}(\phi)]\!]^{uc} = \checkmark$ iff speaker wants to prevent the question under discussion to be downdated with $\neg\phi$.

Contrastive use of auxiliaries

- Use-conditional meaning: type of conventional implicature (Gutzmann, 2013)
- CI content: **PreventDownDating** (**PDD**)

(12) A: I cannot imagine that Peter kicked the dog.
B: Peter DID kick the dog. (Gutzmann et al., 2020, 3)

$$\textbf{kick}(\textbf{peter}, \textbf{the-dog}) \underline{\wedge \textbf{PDD}(\neg \textbf{kick}(\textbf{peter}, \textbf{the-dog}))}$$

Critical construction 2: Irrealis modals

- Sedivy (1990, 99): "existence of some negative pragmatic force."

(13) a. John should have helped Mary.

b. John should have helped Mary,
and John hasn't helped Mary.

- Idea: $\neg\phi$ is a generalized conversational implicature of **SHOULD**(ϕ) (non-projecting, cancellable, calculable)

Generalized conversational implicature (GCI)

- Classical example:

  (14) Alex invited some students.
  inference: Alex did not invite all students.

- No projection in S-family contexts (negation, question, quantifiers, *if*-clauses):

  (15) It is not the case that Alex invited some students.
  no inference: Alex did not invite all students.

- Cancellable:

  (16) Alex invited some students,
  and, in fact, Alex invited all students.

- Calculable: maxim of quantity, scale: <all, some>

Generalized conversational implicature (GCI)

- Relevant example:

  (17) John should have helped Mary.
  inference: John didn't help Mary.

- No projection in S-family contexts:

  (18) It is not the case that John should have helped Mary.
  no inference: John didn't help Mary.

- Cancellable:

  (19) John should have helped Mary,
  and, in fact, he helped her.

- Calculable: maxim of quantity, scale: $<$ actual world, some worlds $>$

Truth-conditional relevance of GCIs

- Levinson (2000): *Presumptive meaning: The theory of generalized conversational implicatures*. MIT Press.
- GCIs are not triggered by particular words or constructions
- GCIs are based on (maxim-derived) heuristics
  (Q: scalar, I: stereotypical information enrichment; M: manner)
- GCIs are default inferences.
- GCIs can have a truth-conditional effect.

(20) Driving home and drinking three beers is better than drinking three beers and driving home. (Levinson, 2000)

Integration of GCIs: $\alpha \mapsto_{GCI} \beta$

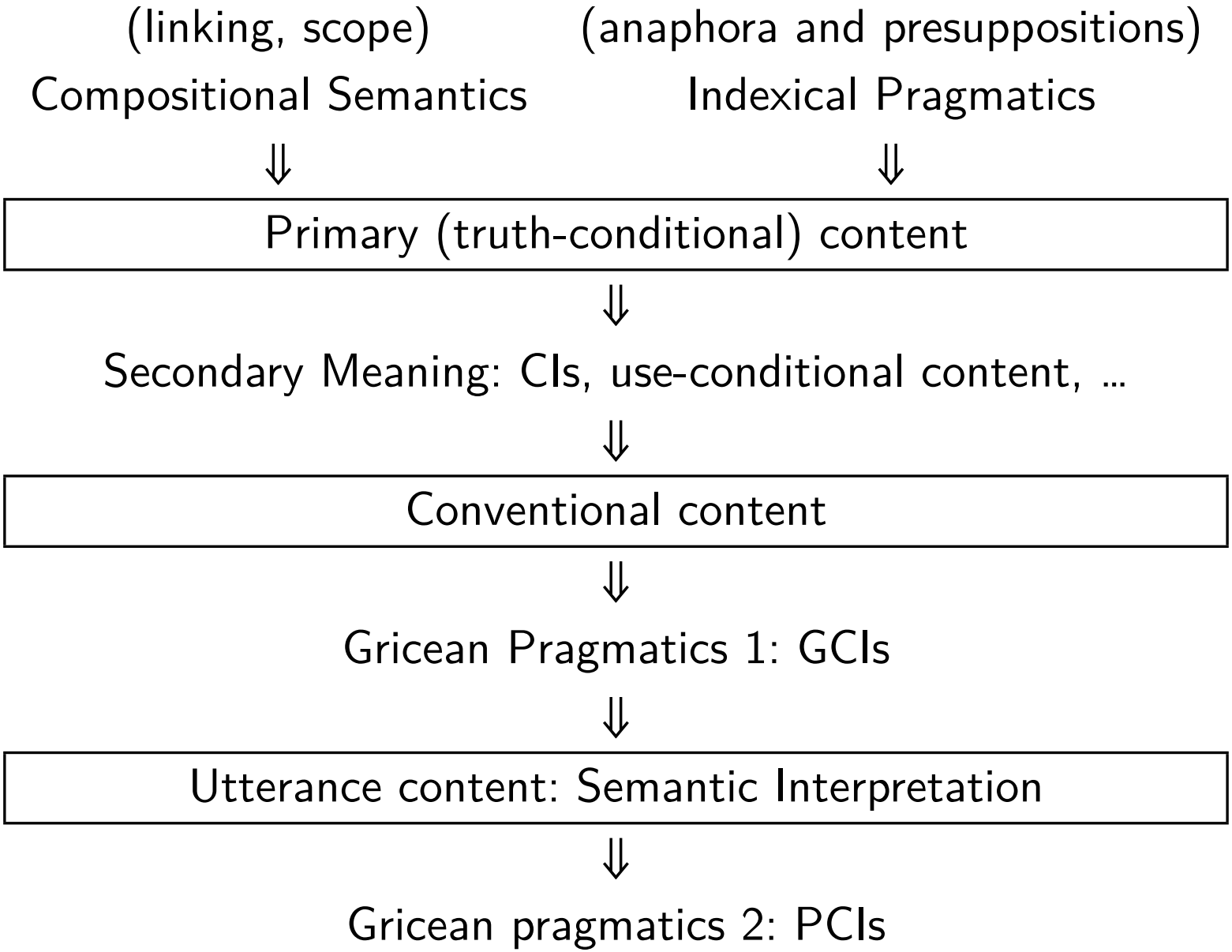
- $\alpha \mapsto_{GCI} \beta$: Optionally replace α from the primary content with $(\alpha \wedge \beta)$ in the utterance content.
- GCI: $\textbf{SHOULD}(\phi) \mapsto_{GCI} \neg\phi$

(21) John should have helped Mary.
Primary content: $\textbf{SHOULD}(\textbf{PAST}(\textbf{help}(\textbf{john}, \textbf{mary})))$
Utterance content: $\ldots \wedge \neg\textbf{PAST}(\textbf{help}(\textbf{john}, \textbf{mary}))$

- GCI: $(\phi \wedge \psi) \mapsto_{GCI} (\phi < \psi)$

(22) If Alex drives home and drinks three beers, she will keep her driver's license.
Primary content: $(\textbf{drive}(\textbf{alex}) \wedge \textbf{drink}(\textbf{alex})) \rightarrow \textbf{keep-license}(\textbf{alex})$
Utterance content:
$((\textbf{drive}(\textbf{alex}) \wedge \textbf{drink}(\textbf{alex})) \wedge \textbf{drive}(\textbf{alex}) < \textbf{drink}(\textbf{alex})) \rightarrow \textbf{keep-license}(\textbf{alex})$

Levinson's (2000) model with CIs added



Basic idea

- Weak NPIs: Require a licenser in the primary content.
- Minimizer NPIs: Require a strong licenser in the utterance content.

Constraint on weak NPIs

Licensing condition for weak NPIs:
The semantic contribution of the item must be in the scope of an NPI-licensing operator at the primary content.

(23) a. Alex didn't see anything.
Primary content: $\neg\exists x(\textbf{see}(\textbf{alex}, x))$

b. Few student read anything.
Primary content: $[\textbf{Few}\, y : \textbf{student}(y)](\exists x(\textbf{read}(x, y))$

(24) * But, Alex DID eat anything.
Primary content: $\exists x(\textbf{eat}(\textbf{alex}, x))$
Utterance content: $\ldots \wedge \underline{\textbf{PDD}(\neg\exists x(\textbf{eat}(\textbf{alex}, x)))}$

(25) * Alex should have eaten anything.
Primary content: $\textbf{SHOULD}(\textbf{PAST}(\exists x(\textbf{eat}(\textbf{alex}, x))))$
Utterance content: $\ldots \wedge \underdot{\neg\textbf{PAST}(\exists x(\textbf{eat}(\textbf{alex}, x))))}$

Constraint on minimizer NPs

Licensing condition for minimizer NPs:
The semantic contribution of the item must be in the immediate scope of a negation in the utterance content of the utterance containing it.

(26) Alex didn't lift a finger.
Primary content: $\neg$**lift-finger**(**alex**)

(27) * Few students lifted a finger.
Primary content: [**Few** x :**student**(x)](**lift-finger**(x))

(28) Alex DID lift a finger.
Primary content: **lift-finger**(**alex**)
Utterance content: ...$\wedge$**PDD**($\neg$**lift-finger**(**alex**)))

(29) Alex should have lifted a finger.
Primary content: **SHOULD**(**PAST**(**lift-finger**(**alex**)))
Utterance content: ...$\wedge\neg$**PAST**(**lift-finger**(**alex**)))

Restrictor of a universal quantifier

Restrictor of a universal is an NPI-licensing context, but not negative.
⇒ weak NPIs are licensed, minimizers are not.

(30) [Every driver who drank any alcohol] was stopped by the police.
$\forall y((\textbf{driver}(y) \wedge \exists x(\textbf{alcohol}(x) \wedge \textbf{drink}(y,x))) \rightarrow \textbf{get-stopped}(x))$

(31) $[Every driver who drank a drop last night] caused an accident.
$\forall y((\textbf{driver}(y) \wedge \textbf{drink-drop}(y)) \rightarrow \textbf{cause-accident}(y))$

Law-like universal statements

- Universal statement with negative side message:

  (32) Everyone who drinks and drives behaves irresponsibly.
  Inference: One shouldn't drink and drive.

- GCI: $\forall x(\phi \rightarrow \psi) \mapsto_{GCI} \underline{\textbf{SHOULD}(\neg\exists x\phi)}$

  based on: maxim of relevance

- Minimizers licensed through GCI:

  (33) [Every driver who drinks a drop] should loose their driver's license.
  Primary content:
  $\forall x((\textbf{driver}(x) \wedge \textbf{drink-drop}(x)) \rightarrow \textbf{SHOULD}(\textbf{loose-license}(x))$
  Utterance content:
  $\ldots \wedge \underline{\textbf{SHOULD}(\neg\exists x(\textbf{driver}(x) \wedge \textbf{drink-drop}(x)))}$

- GCI is optional, but minimizer is only felicitous if the GCI is included.

Summary

- NPI-licensing shows grammatical reflex of different levels of semantic representation. (primary content vs. utterance content)
- Licensors of minimizers are a subset of licensors of weak NPIs, but:
  - Non-concentricity: different semantic levels for licensing.
  - Non-homogeneity: similar primary content can have different relevant utterance content.

Conclusion

- NPI theory
  - Minimizers licensed by a subset of the licensors of weak NPIs
  - Minimizers licensed in a superset of the semantic levels of weak NPIs
- Architecture of meaning representation
  - Incorporation of CIs and GCIs
  - CIs: contributed by elements in the structure, integrated for discourse-anaphoric and other reasons
  - GCIs: optional rewrite rules on semantic representation, not contributed by elements in the structure
  - Licensing of minimizer NPIs additional empirical argument for grammatical relevance of CIs and, maybe, GCIs.
- Next steps:
  More data on NPIs in context with negative CIs and GCIs needed.
- Integration into HPSG sketched in the appendix

Thank you for your attention!

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Integration into HPSG

- Example framework: Lexical Resource Semantics (LRS, Richter & Sailer (2004))
- Hasegawa & Koenig (2011): primary and secondary content in LRS
- Sailer & Am-David (2016), Rizea & Sailer (2020): integration of presuppositions and CIs

$$\left[\begin{array}{l} \textit{sign} \\ \quad \textsf{lrs} \left[\begin{array}{ll} \textsf{excont} & \text{sem. representation of the phrase} \\ \textsf{incont} & \text{expression that all dependents take scope over} \\ \textsf{parts} & \left\langle \text{list of contribution constraints} \right\rangle \\ \textsf{presup} & \left\langle \text{list of unaccommodated presuppositions} \right\rangle \\ \textsf{ci} & \left\langle \text{list of unretrieved CIs} \right\rangle \end{array}\right] \end{array}\right]$$

Extended architecture

$$\begin{bmatrix} \textit{utterance} \\ \text{utt-cont} \;\; \underline{\text{GCI-enriched utterance content}} \\ \text{lrs} \quad \begin{bmatrix} \text{ci-exc} & \underline{\text{CI-enriched content}} \\ \text{excont} & \text{sem. representation of the phrase} \\ \text{incont} & \text{expression that all dependents take scope over} \\ \text{parts} & \langle \text{ list of contribution constraints } \rangle \\ \text{at-issue} & \text{truth-conditional content} \\ \text{presup} & \langle\rangle \\ \text{ci} & \langle\rangle \end{bmatrix} \end{bmatrix}$$

- AT-ISSUE: must be a component of the EX-CONT
- PRESUP-elements: can be accommodated in the scope of operators such as negation, quantifiers, believe-predicates, etc.
- CI-elements: can be retrieved in the scope of speech-act operators
- Utterance: PRESUP and CI are empty.
  UTT-CONT enriches CI-EXC value with GCIs.

NPIs in HPSG

- Representational, collocational theory:
  NPIs are restricted to occur in a particular constellation in the semantic representation.
- Adapted from Richter & Soehn (2006)
- Feature COLL (collocation/context of lexical licensing) on lexical items
- COLL value specifies domain for licensing:
  - weak NPIs: complete clause
  - minimizer NPIs: utterance
- COLL value specifies possible types of licensor:
  - weak NPIs: NPI is in the scope of any NPI-licensing operator.
  - minimizer NPIs: NPI is in the immdediate scope of negation.

Analysis in Richter & Soehn (2006)

Analysis of German *beileibe* 'certainly'

$$\left[\begin{array}{l} \textsc{phon} \left\langle \textit{beileibe} \right\rangle \\ \textsc{cont} \ \boxed{1} \\ \textsc{coll} \left\langle \begin{array}{l} \left[\begin{array}{l} \textit{complete-clause} \\ \textsc{lf-lic} \ \texttt{aa-str-operator}\left(\boxed{1}\right) \end{array}\right] \\ \mathbf{OR} \\ \left[\begin{array}{l} \textit{utterance} \\ \textsc{bgr-lic} \left\langle \ldots, \texttt{am-str-operator}\left(\boxed{1}\right), \ldots \right\rangle \end{array}\right] \end{array} \right\rangle \end{array}\right]$$

New analysis

$$\begin{bmatrix} \text{phon} & \langle \textit{ever} \rangle \\ \text{cont} & \boxed{1} \\ \text{coll} & \left\langle \begin{bmatrix} \textit{complete-clause} \\ \text{lf-lic} \ \texttt{npi-licensing-operator}(\boxed{1}) \end{bmatrix} \right\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{phon} & \langle \textit{budge (an inch)} \rangle \\ \text{cont} & \boxed{1} \\ \text{coll} & \left\langle \begin{bmatrix} \textit{utterance} \\ \text{utt-cont-lic} \ \texttt{negation}(\boxed{1}) \end{bmatrix} \right\rangle \end{bmatrix}$$