Minimizer negative polarity items in non-negative contexts

Manfred Sailer
Frankfurt a.M.

HPSG 2021 – Workshop on Negation
1 Introduction

2 Challenging data on minimizers

3 Enriched semantic representations

4 Analysis

5 Conclusion

6 Appendix: Integration into HPSG
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

1. Introduction
2. Challenging data on minimizers
3. Enriched semantic representations
4. Analysis
5. Conclusion
6. Appendix: Integration into HPSG
Introduction

Challenging data on minimizers

Enriched semantic representations

Analysis

Conclusion

Appendix: Integration into HPSG
Data considered:

- Restrictor of universal quantifier
- Two types of affirmative sentences
Restrictor of a universal quantifier

- 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 licensing

- 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.
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”.
1 Introduction

2 Challenging data on minimizers

3 Enriched semantic representations

4 Analysis

5 Conclusion

6 Appendix: Integration into HPSG
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).
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): Contrastively used auxiliaries license 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.
  - $\left\llbracket \text{VERUM}(\phi) \right\rrbracket^{uc} = \checkmark$ 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.  

\[
\text{kick(peter, the-dog) \wedge PDD(\neg\text{kick(peter, the-dog)})}
\]
Critical construction 2: Irrealis modals

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

(13)  
\begin{align*}
    & a. \text{John should have helped Mary.} \\
    & b. \text{John should have helped Mary, and John hasn’t helped Mary.}
\end{align*}

- Idea: $\neg \phi$ is a generalized conversational implicature of $\text{SHOULD}(\phi)$ (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.

- Calcuclable: 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

- 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 $\alpha$ from the primary content with $(\alpha \land \beta)$ in the utterance content.

- GCI: SHOULD$(\phi) \mapsto_{GCI} \neg \phi$

(21) John should have helped Mary.
Primary content: SHOULD(PAST(help(john, mary)))
Utterance content: ...\neg PAST(help(john, mary))

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

(22) If Alex drives home and drinks three beers, she will keep her driver’s license.
Primary content: (drive(alex) \land drink(alex)) \rightarrow keep-license(alex)
Utterance content: 
((drive(alex) \land drink(alex)) \land drive(alex) < drink(alex)))
\rightarrow keep-license(alex)
Levinson’s (2000) model with CIs added

- (linking, scope) Compositional Semantics
- (anaphora and presuppositions) Indexical Pragmatics

↓

Primary (truth-conditional) content

↓

Secondary Meaning: CIs, use-conditional content, …

↓

Conventional content

↓

Gricean Pragmatics 1: GCIs

↓

Utterance content: Semantic Interpretation

↓

Gricean pragmatics 2: PCIs
1 Introduction

2 Challenging data on minimizers

3 Enriched semantic representations

4 Analysis

5 Conclusion

6 Appendix: Integration into HPSG
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: \( \neg \exists x(\text{see}(\text{alex}, x)) \)
   
b. Few student read anything.
   Primary content: \([\text{Few} y : \text{student}(y)](\exists x(\text{read}(x, y)))\)

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

(25)  * Alex should have eaten anything.
   Primary content: \( \text{SHOULD(PAST}(\exists x(\text{eat}(\text{alex}, x)))) \)
   Utterance content: \( \ldots \land \neg \text{PAST}(\exists x(\text{eat}(\text{alex}, x))) \)
Constraint on minimizer NPIs

Licensing condition for minimizer NPIs:
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: \( \neg \text{lift-finger}(\text{alex}) \)

(27) * Few students lifted a finger.
    Primary content: \([\text{Few} \times : \text{student}(x)](\text{lift-finger}(x)) \)

(28) Alex DID lift a finger.
    Primary content: \( \text{lift-finger}(\text{alex}) \)
    Utterance content: \( \ldots \land \text{PDD}(\neg \text{lift-finger}(\text{alex})) \)

(29) Alex should have lifted a finger.
    Primary content: \( \text{SHOULD}(\text{PAST}(\text{lift-finger}(\text{alex}))) \)
    Utterance content: \( \ldots \land \neg \text{PAST}(\text{lift-finger}(\text{alex})) \)

Sailer (Frankfurt a.M.)
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.
∀y(\(\text{driver}(y) \land \exists x(\text{alcohol}(x) \land \text{drink}(y, x))) \rightarrow \text{get-stopped}(x))

(31)  $[Every driver who drank a drop last night] caused an accident.
∀y(\(\text{driver}(y) \land \text{drink-drop}(y)) \rightarrow \text{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: $\forall x(\phi \to \psi) \iff_{GCI} \text{SHOULD}(\neg \exists x \phi)$

  based on: maxim of relevance

- Minimizers licensed through GCI:

  (33) [Every driver who drinks a drop] should loose their driver’s license.

  Primary content:

  $\forall x((\text{driver}(x) \land \text{drink-drop}(x)) \to \text{SHOULD} (\text{loose-license}(x)))$

  Utterance content:

  $\ldots \land \text{SHOULD}(\neg \exists x (\text{driver}(x) \land \text{drink-drop}(x)))$

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

Challenging data on minimizers

Enriched semantic representations

Analysis

Conclusion

Appendix: Integration into HPSG
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!


References III

https://scholarworks.umass.edu/nels/vol14/iss1/8.


doi:DOI:https://doi.org/10.3765/salt.v18i0.2483.  
References IV


References V


References VI


1 Introduction

2 Challenging data on minimizers

3 Enriched semantic representations

4 Analysis

5 Conclusion

6 Appendix: Integration into HPSG
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

$\begin{bmatrix}
\text{sign} \\
\text{lrs}
\end{bmatrix}
\begin{bmatrix}
\text{excont} & \text{sem. representation of the phrase} \\
\text{incont} & \text{expression that all dependents take scope over} \\
\text{parts} & \langle \text{list of contribution constraints} \rangle \\
\text{presup} & \langle \text{list of unaccommodated presuppositions} \rangle \\
\text{ci} & \langle \text{list of unretrieved CIs} \rangle
\end{bmatrix}$
Extended architecture

\[ \text{utterance} \]

\[ \text{utt-cont} \quad \text{GCI-enriched utterance content} \]

\[ \text{ci-exc} \quad \text{CI-enriched content} \]

\[ \text{excont} \quad \text{sem. representation of the phrase} \]

\[ \text{incont} \quad \text{expression that all dependents take scope over} \]

\[ \text{lrs} \]

\[ \text{parts} \quad \left\{ \text{list of contribution constraints} \right\} \]

\[ \text{at-issue} \quad \text{truth-conditional content} \]

\[ \text{presup} \quad \langle \rangle \]

\[ \text{ci} \quad \langle \rangle \]

- **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 GCI.
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 immediate scope of negation.
Analysis of German *beileibe* ‘certainly’

\[
\begin{align*}
\text{phon} &\left\langle \textit{beileibe} \right\rangle \\
\text{cont} &\left\langle 1 \right\rangle \\
\text{coll} &\left\langle \text{OR} \right. \\
&\left\langle \text{utterance} \right. \\
&\left. \text{bgr-lic} \left\langle \ldots, \text{am-str-operator}(1), \ldots \right\rangle \right. \\
&\left. \text{complete-clause} \right. \\
&\left. \text{lf-lic aa-str-operator}(1) \right. \\
\end{align*}
\]
New analysis

phon $$\langle \text{ever} \rangle$$
cont [1]
coll $$\langle \text{complete-clause}$$
       If-lic npi-licensing-operator(1) $$\rangle$$

phon $$\langle \text{budge (an inch)} \rangle$$
cont [1]
coll $$\langle \text{utterance}$$
       utt-cont-lic negation(1) $$\rangle$$