NPI licensing in enriched semantic representations

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Introduction

- NPIs vary with respect to their licensers.
- Canonical observation: More restricted ("strong NPIs") 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 $\subset$ anti-additive $\subset$ downward-entailing $\subset$ non-veridical

  not | *noone*, [*every* N], ... | *few.* ... | interrogative, ...
- 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 ...

- Sedivy (1990): Counterexamples to concentric, homogeneous licensing

  (3) a. I DO give a damn.

  b. * Bert DID ever kiss Marilyn Monroe.

  - no overtly negative element
  - strong NPI possible, weak NPI not.
- Today:
  - Two German NPIs
  - Focus on occurrences in non-negative contexts

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   - *Mucks* 'peep'
   - *auf einen grünen Zweig kommen* 'be ok'

3. Accounts of NPIs

4. Enriched semantic representations
   - Presuppositions: *before* clauses
   - Conventional implicatures/use-conditional meaning
   - Generalized conversational implicatures: Threat *if* clauses

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Data considered

- Two German NPIs
  - *einen Mucks machen* ‘make a peep’
  - *auf einen grünen Zweig kommen* ‘(not) to get anywhere’ (lit.: ‘get on a green twig’)
- COSMAS corpora: `https://cosmas2.ids-mannheim.de`
  (consulted: publically accessible written corpora from Germany)
- Occasionally: comparison with *je(mals)* ‘ever’

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Overview

- Overall occurrences of *Mucks*: 1.538 hits
- ...with negative indefinite (*kein* Mucks*): 1003 hits (65%)
- ...with non-negative indefinte determiner (*ein* Mucks*): 221 (14%)

Expected environments

ein Mucks*	$N = 221$
neg word	52
without	45
kaum 'hardly'	43
nicht 'not'	15
matrix predicate	4
	159 (72%)

Less expected environments

ein Mucks*	$N = 221$
before	14
every/whoever	5
if	15
yes/no biased	1
other	27
	62 (28%)

Overall distribution

- Predominantly in negative contexts: 76% in strong NPI-licensing environments
- Looks like strong NPI ("minimizer semantics")
- Among the less expected environments:
  - *every/whoever/if* and most "other": threat/ should not
  - *before*

'Should not'-cases

Licensing in threat-contexts (Linebarger, 1980)
if-clauses with threat reading (11/15 hits)

(4) Wenn einer von euch in drei Kilometer Entfernung auch nur einen
if one of you in three kilometer distance even a
Mucks macht, dann hören wir das!
peep makes then hear we that
'If one of you makes even a peep in 3km distance, we will hear it.'

Restrictor of universal quantifier with threat reading (5/5 hits):

(5) [sie] töten jeden, der sich bewegt oder einen Mucks macht
they kill everyone who moves or a peep makes
'...they kill everyone who moves or makes a peep'

Other expressions of undesirable consequence

Coordination (7 hits):

(6) Ein Mucks, und ich prügel dich tot
one peep and I beat you to death

sobald 'as soon as' (2 hits):

(7) ... dass Genie, sobald sie nur einen Mucks von sich gab,
that Genie as soon as she even a peep uttered
vom Vater ... geprügelt wurde;
by.the father beaten was
'...that Genie was beaten by her father as soon as she uttered even a peep.'

Note: only 4 occurrences for *sobald ...je(mals)*

Other expressions of undesirable consequence

(8) *X* hat ...den ersten, der ... einen Mucks von sich gegeben hat,
has the first who a peep uttered has
gesperrt
blocked

'[name] blocked the first person who made a peep'

(9) Da muss nur einer einen Mucks machen, und schon wachen
there must just one a peep make and already wake
alle auf.
all up

'It's enough if one person makes a peep, and all will wake up.'

(10) Ein Mucks, und ich prügel dich tot
one peep and I beat you dead

'One peep, and I will beat you to death'

Negative side message: 'One shouldn't make a peep'

Note on *je(mals)* 'ever'

Note: The weak NPI *je(mals)* 'ever' is not possible in the coordination structure!

(11) a. Wenn du je wieder deine Hausaufgaben vergisst, war's das mit dem Kurs.

'If you ever forget to do your homework again, the course will be over for you.'

b. * Du vergisst je wieder deine Hausaufgaben, und das war's mit dem Kurs.

'It's enough if you ever forget to do your homework, and the course will be over for you.'

Summary on the first context

- Instead of a characterization by structure, the pragmatics of the construction seems to be essential:
  'Should not make a peep'
- Covers: 22 out of 62 unexpected cases
- Some of these structures do not allow for weak NPIs

before clauses (14/221)

- With *auch nur* 'even' (10/14 hits)

  (12) Wenn jemand in den Raum kommt, macht man sich ein
  when someone into the room comes makes one oneself a
  Bild von ihm, bevor er auch nur einen Mucks gesagt hat.
  picture of him before he even a peep said has
  'When someone enters the room, one gets a picture of him before he even says a peep'

- With *können* 'can' (4/14 hits)

  (13) Noch bevor die Frau einen Mucks machen konnte, hielt der
  even before the woman a peep make could held the
  Fremde ihr den Mund zu
  stranger her the mouth shout
  'Even before the woman could make a peep, the stranger silenced her'

- Negative side message: The subject does not/cannot make a peeps at some relevant time

Other temporal clauses

(14) Solange noch ein Mucks aus Pavarottis Kehle kommt, macht
as long as still a peep out of Pavarotti's throat comes makes
er weiter.
he further

'As long as there is still a peep coming out of Pavarotti's throat, he will continue.'

- Negative side message: The subject does not/cannot make a peeps at some relevant time (in the future)
- Note: *solange ...je(mals)* 'as long as ...ever': no relevant hit (51 total hits)

Summary: *Mucks*

- *Mucks* is an NPI
- but: non-negative contexts are possible.
- These are best characterized pragmatically, ...
- ...because some of them don't allow for weak NPIs.
- ...they come with negative side message:
  - "threats": 'the subject better not make a peep'
  - *before*: 'the subject does not make a peep at some relevant time'

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Overview

- Overall occurrences of *auf * grün* Zweig*: 1902 hits
  (Query: `auf /w+2 &grün &Zweig`)
- ...with negative indefinite det (*auf kein* grün* Zweig*): 980 hits (52%)
- ...with non-negative indefinite det (*auf ein* grün* Zweig*): 779 hits (41%)
- ...with definite det (*auf den/dem grün* Zweig*): 117 hits (6%)

Overview (cont.)

- Classified: first 100 hits of *auf ein* grün* Zweig*
- Among them: 23 literal or metaphoric uses

Classical (weak) NPI contexts

ein gr.Zweig*	$N = 77$
neg word	12
without	5
nicht 'not'	15
matrix predicate	2
few, rarely, only	3
yes/no biased	4
wh-quest	3
	(57%) 44

Less expected contexts

ein gr.Zweig*	$N = 77$
in order to	13
try	5
again	5
other	10
	(43%) 33

- Majority of cases in NPI-licensing context (if extrapolated: in classical NPI-licensing environments: 75%, in unexpected ones: 25%)

Prominent non-NPI contexts: Goal

(15) Um endlich mal auf einen grünen Zweig zu kommen, will er
To finally once on a green twig to get wants he
ins Handy-Business einsteigen.
in.the mobile phone business enter
'He wants to enter the mobile phone business in order to finally get somewhere.'

(16) Nokia unterstütze die Tochter allerdings weiter bei ihren
Nokia supported the daughter however further in its
Bemühungen, wieder auf einen grünen Zweig zu kommen.
attempts again on a green twig to get
'However, Nokia supported her daughter enterprise further in the attempt to get on track again.'

- No particular requirements on the syntax of the construction.
- But inference: speaker thinks that subject is not "on a/the green twig" at a relevant time (but wants/should to get there)

Other contexts with inference: not “on a green twig” right now”

- *wieder* ‘again’

(17) Die europäische Halbleiterindustrie kommt langsam wieder auf
the European semiconductor industry comes slowly again on
einen grünen Zweig
a green twig
‘The European seminconductor industry is slowly getting somewhere again.’
⇒ author thinks the industry is not in a desirable condition at the moment

Matrix predicate

NPI-licensing context, but also support inference: ‘Speaker thinks subject is not on a green twig’

(18) [er] “sah es als fast unlösbar an” hier auf einen
he considered it as almost unsolvable PTCL here on a
grünen Zweig zu kommen.
green twig to come
‘He “considered it almost unsolvable” to get somewhere here.’

Negative matrix clause *weit entfernt sein*

- *auf einen grünen Zweig kommen*:

(19) Wir sind immer noch weit davon entfernt, auf einen grünen Zweig
we are still far from it away on a green twig
zu kommen.
to come
'We are still far away from getting somewhere.'
⇒ We are not in a desirable position at the moment

- with *je(mals)* 'ever': 2 relevant hits (of 121)

(20) Vor allem vermag nichts mehr diese Überzeugung zu
above all is capable nothing more this conviction to
erschüttern, dass Arthur Rimbaud, weit entfernt davon, jemals
shake that Arthur Rimbaud far away from ever
dem Schreiben zu entsagen, ...
to.the writing to renounce
'Above all, nothing can shade this conviction that Arthur Rimbaud, far away from ever renouncing to writing, ...'

Weak licenser: *wenig* 'few'

Other classical weak NPI licensing contexts:

(21) In allen drei anstehenden Landtagswahlen hat die FDP wenig
in all three upcoming regional elections as the FDP little
Chancen, auf einen grünen Zweig zu kommen.
chances on a green twig to come
'There are few chances for FDP to get somewhere in all three upcoming regional elections.'

Note: Even though the expression is inside a complement of the head noun syntactically, it is in a downward-entailing context:

(22) Alex hat wenig Chancen, eine Medaille zu gewinnen.
'Alex has little chance to win a medal.'

$\models$ Alex hat wenig Chancen, eine Bronzemedaille zu gewinnen.
'Alex has little chance to win a bronze medal.'

But: Compatible with 'Speaker thinks that FDP is not/will not be doing ok'

Questions

Strong bias that the subject is not doing ok:

(23) Wie soll man da auf einen grünen Zweig kommen und
how should one there on a green twig come and
unabhängig von Sozialleistungen werden?
independent of social services become
'How is one supposed to get somewhere and to become independent of social services?'

NPI licenser but no intention of acchievement?

(24) Die Nostalgie-Show «18» will auf keinen grünen Zweig kommen.
the nostalgia show «18» wants on no green twig come
(https://www.quotenmeter.de/n/40588/show-freitag-bringt-rtl-miese-werte, 10.12.2022)

'It seems that the nostalgia show «18» does not get anywhere.' (epistemic)

$ 'The nostalgia show aspires not to get anywhere' (deontic)

Compare:

(25) Das Publikum will keinen Mucks machen [constructed]
the audience wants no peep make

'The audience has the desire not to make a peep.' (deontic)

? 'It seems that the audience makes no peep' (epistemic)

An NPI licensor is not sufficient. It must be a goal that the subject is doing well.

Counterexample?

(26) Wir sind gemeinsam auf einen grünen Zweig gekommen, man
we have together on a green twig come one
muss keinen auswechseln.
must nobody substitute
'We got somewhere together, there is no need to substitute anyone.'

(27) Es ist in Ordnung in diesem Jahr zu viel auszugeben, denn
'It is fine to spend a lot of money this year because'
du wirst größtenteils auf einem grünen Zweig bleiben.
you will for the most part on a green twig stay
'...you will stay financially ok for the most part.'
(https://deno-licina.com/2021/12/25/
die-eine-sache-die-dein-leben-im-jahr-2022-veraendern-wird-laut-sternzeichen/, 12.12.2022)

- No inference that the subject is not doing ok at the present moment.
- However: Salient option of the contrary? Salient different opinion?

Generalization

auf einen grünen Zweig kommen

- means: 'be ok (in the relevant domain)'
- NPI licensers seem to be neither necessary nor sufficient for a felicitous occurrence of the expression
- it occurs in contexts which by themselves do not come with a negative side message
- Conventional, idiosyncratic backgrounded meaning contribution:
  (a) (a salient attitude holder thinks that) the subject is not (doing) ok (in the relevant domain) (at some relevant time)
  (b) but that subject indents/is intended to do ok

Summary: Two NPIs

- Non-at-issue semantics plays a role in NPI licensing, though in different ways:
- *einen Mucks machen* ‘make a peep’: Can be licensed by at-issue negation or by negation in negative message.
- *auf einen grünen Zweig kommen* ‘get on a green twig’: Contributes a negative non-at-issue side message. Only licensed if this message is not in conflict with at-issue meaning.

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Theories of NPI licencsing

- Entailment-based approaches (Ladusaw, 1980; Giannakidou, 1998)
- Scalar approach
  (Krifka, 1995; Eckardt, 2001; Eckardt & Csipak, 2013)
- Representational approach (Sailer, 2007, 2009a)
- LF-representational approach (Linebarger, 1980, 1987)
- Inference-interaction accounts (Liu, 2012; Onea & Sailer, 2013)

Entailment-based approaches

- Ladusaw (1980), van der Wouden (1997), Giannakidou (1998), ...
- Entailment-based characterization of NPI-licensing contexts.
- Homogeneous and concentric NPI licensing patterns expected.
- Only truth-conditional, primary, content is taken into consideration, no “side messages”.

LF-representational approach

- Linebarger (1980, 1987)
- An NPI must be in the immediate scope of a negation at LF.
- Condition can be satisfied in sentence or in *Negative Implicatum* (NI)
- NI used for weak licensing contexts, rather than for weak-strong distinction of NPIs.

  (28) Few students read anything to pass the exam.
  Negative implicatum: Many students did not read anything.

- Since the NI needs to be a syntactic structure, it's status is unclear.

Scalar approaches

- Kadmon & Landman (1993), Krifka (1995), Eckardt (2005), Eckardt & Csipak (2013), ...
- An NPI triggers alternatives and is used to make strong/emphatic statements in comparison to using any of its alternatives.
- Distinction between weak and strong NPIs often ignored
- When considered: strong NPIs come with non-veridicality condition (Eckardt & Csipak, 2013).
  But:

(29) John DID lift a finger to help Mary.
Inference: John lifted a finger to help Mary.

(30) dass Genie, sobald sie nur einen Mucks von sich gab, vom Vater mit einer Holzlatte geprügelt wurde;
'that Genie was beaten by her father as soon as she even made a peep'

Representational approach

- Sailer (2007, 2009a,b)
- Licensing condition formulated as constraint on semantic representation
- Weak NPI: in the scope of a licensing operator
- Minimizer: in the immediate scope of a strong licensor, in at-issue content and presuppositions.

$\Rightarrow$ Minimizers in proper subset of contexts of weak NPIs.

- Refined to capture licensing of strong NPIs in non-negative contexts in Sailer (2021, 2022)

Inference interaction approaches

- Liu (2012); Sailer (2018) for PPIs
- Onea & Sailer (2013): *all that*

(31) $[[\textit{all that}]] = \lambda d.\lambda u.\lambda P.\lambda x.P(d)(x)$
presupposition:
$\exists d(\mathbf{HIGH}(d,s)$ (d is a high degree on scale s)
$\wedge\mathbf{BEL}(u,\neg P(d)(x))$ (u doesn't believe x to be d-happy)
$\wedge\exists u'\mathbf{BEL}(u',P(d)(x))$ (some u' believes x to be d-happy)

(32) Alex isn't all that happy.
at issue: Alex isn't happy to degree d
presupposes: d is a high degree on a salient scale
the speaker does not believe that Alex is happy to degree d
someone else believes that Alex is happy to degree d.

Summary

- Existing approaches struggle with NPI licensing in non-negative contexts and with the occurrence of strong NPIs in contexts that don't allow weak NPIs (non-concentricity)
- Sedivy (1990): Two types of licensing needed, one for weak NPIs (licensing in grammar), one for strong NPIs (licensing in pragmatics). But *Mucks* vs *grüner Zweig*: two distinct pragmatic licensing mechanisms
- Plan for today:
  - Modify representational theory to include "side messages". (Sailer, 2021)
  - *Mucks*: Licensing by conventional and generalized conversational meaning (Sailer, 2021, 2022)
  - *grüner Zweig*: Contribution of conventional non-at-issue meaning (Onea & Sailer, 2013)

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Basic considerations

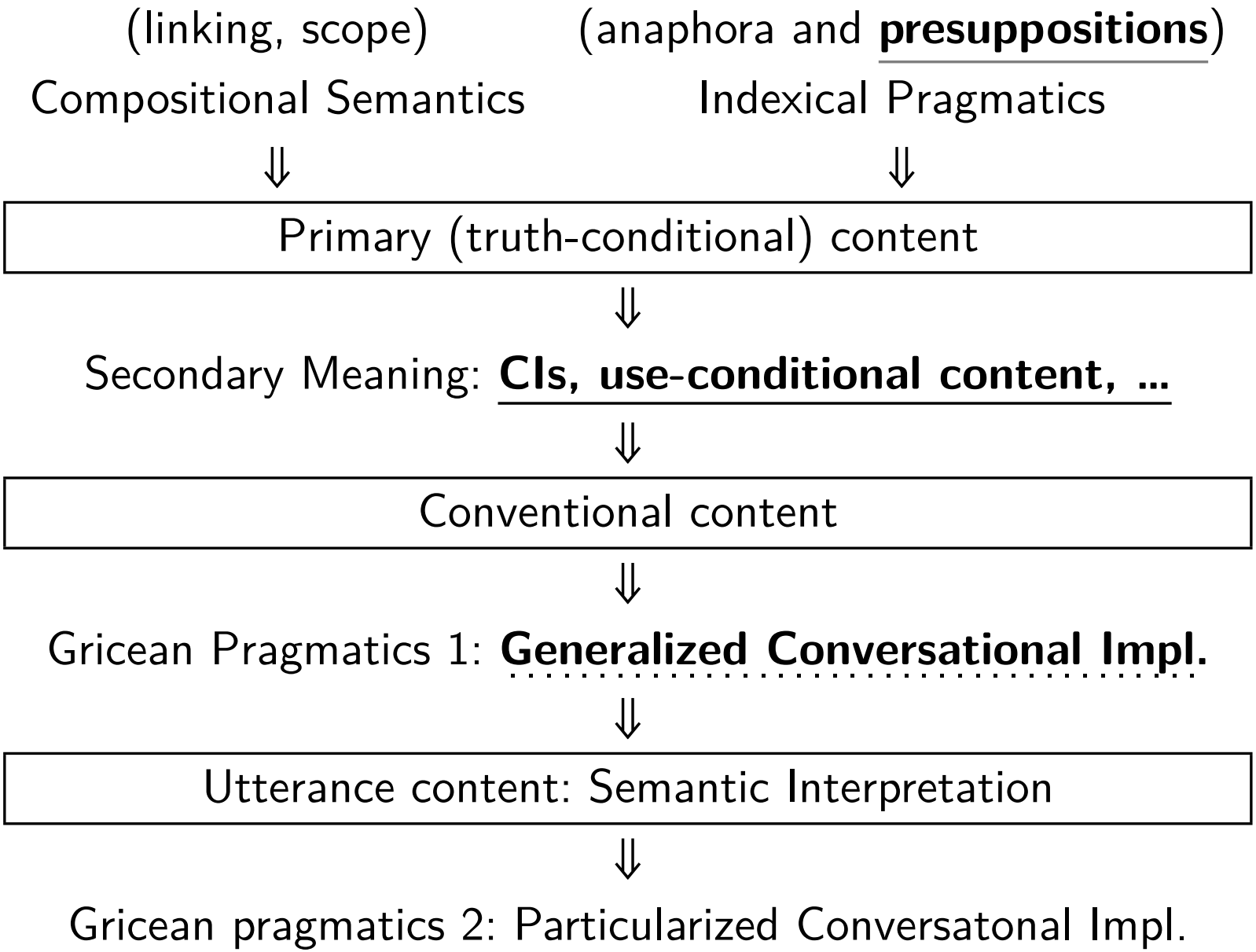
Semantic representation of a sentence contains more than its core, primary truth conditional content, though the two are distinguishable.

- 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.

What "meaning" should be represented?

- Primary meaning
  - Bound readings of anaphora
  - Scope resolution
  - Presupposition accommodation: definedness of truth-conditional content
- Secondary meanings:
  - conventional implicatures, use-conditional content (Bach, 1999; Gutzmann, 2013; Hasegawa & Koenig, 2011; Potts, 2005)
  - Resolution of discourse anaphora (AnderBois et al., 2015)
- Generalized conversational implicatures (GCI): Levinson (2000), Carston & Hall (2012)
- Purely conversational (not grammatically relevant):
  - Particularized conversational implicatures (Grice, 1975)

Levinson's (2000) model with CIs added



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Types of *bevor* 'before' clauses

- Krifka (2010): *bevor* clauses that license expletive negation:

  (33) Peter wollte Potsdam nicht verlassen bevor (nicht) das Projekt in ruhigem Fahrwasser war.
  'Peter did not want to leave Potsdam before the project was running smoothly.'

  Requires negative element in the matrix clause. ⇒ different from the *Mucks* examples!

- Factivity of *bevor* clauses: Generalized Conversational implicature, but lexicalized (Krifka, 2010)

  (34) Herr Maier lernte Frau Schmidt kennen, bevor er Herrn Schmidt kennenlernte.

  'Mr. Maier met Mrs. Schmidt before he met Mr. Schmidt.'

  Generalized Conversational implicature: Mr. Maier met Mr. Schmidt at some point.

  ⇒ *Mucks* examples: no factivity!

Mucks-containing *bevor* clauses

- Standard meaning of *bevor* clauses:
  A bevor B: $\exists t(A@t \wedge \neg\exists t'(t' < t \wedge B@t'))$
- But: Meaning of the content of the temporal clauses is not at issue!

(35) I watch Crilly after he has heard the news from his sister, Megan. (BNC)
not at issue: he has heard the news from his sister

(36) Ooh I didn't like them when they were dressed as skeletons. (BNC)
not at issue: they were dressed as skeletons

Mucks-containing *bevor* clauses

- *A bevor B*:
  at issue: $\exists t(A@t \wedge \Diamond\exists t'(t < t' \wedge B@t')$
  presupposes: $\neg\exists t''(t'' < t \wedge B@t'')$
  - factive inference: $B@t'$ (cancellable, generalized conversational)

(37) Alex ging, bevor Kim anrief.

$$\exists t(\mathbf{leave}(\mathbf{alex})@t \wedge \Diamond\exists t'(t < t' \wedge \mathbf{call}(\mathbf{kim})@t') \wedge \underline{\neg\exists t''(t'' < t \wedge \mathbf{call}(\mathbf{kim})@t'')}$$

- *Mucks* would be in the scope of a negation in a presupposition (i.e., a convenionalized non-at-issue side message).
- Note: Weak NPIs are also licensed in *before* clauses (Homer, 2008).

Presuppositions and NPI licensing

- Not all strong NPIs seem to be ok in *before* clauses (Homer (2008), but no example)

  (38) *Alex left the class before it got interesting at all.

- Weak NPIs are licensed in *before* clauses, i.e., if the licenser is inside a presupposition.
- The same is true for *Mucks*

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Constructions with CI/use-conditional NPI licensing

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

  (39) 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 $\neg\phi$.
- Sailer (2022):
  - truth conditional: **TRUE**(p)
    use conditional: **salient-utt**(q), where $q \in \{p, \neg p, ?p\}$

CI-triggered NPI licensing context

(40) A: Alex hat mal wieder keinen Finger krumm gemacht, oder?
'As usual, Alex didn't lift a finger, right?'
B: Nee du, Alex HAT einen Finger krumm gemacht.
'To the contrary, Alex DID lift a finger.'

$$\textbf{TRUE}(\textbf{lift-finger}(\textbf{alex})) \underline{\wedge \textbf{salient-utt}(\neg \textbf{lift-finger}(\textbf{alex}))}$$

Claim in Sailer (2021, 2022): minimizer NPIs, but not *ever*-type NPIs can be licensed in the use-conditional part of the semantic representation.

(41) * Alex HAT mir jemals geholfen.
Alex has me ever helped

* Alex has ever helped me.

Lexically triggered CI

- Gutzmann (2013) slurs: *Kraut*
  truth conditional: $\textbf{German}(x)$
  use conditional: $\textbf{negative-attitude}(y, \hat{}\forall x(\textbf{German}(x)))$

  (42) Alex is not a Kraut.

  $\neg\textbf{German}(\textbf{alex})$
  $\underline{\wedge\textbf{negative-attitude}(\textbf{speaker}, \hat{}\forall x(\textbf{German}(x)))}$

- *auf den grünen Zweig (kommen)*:
  truth conditional: $\textbf{do-fine}(x)$
  use conditional: $\textbf{think}(y, \hat{}(\textbf{desires}(x, \hat{}(\textbf{do-fine}(x)) \wedge \neg\textbf{do-fine}(x))))$,
  where y is a salient attitude holder, typically the speaker

  (43) Alex kommt auf keinen grünen Zweig.

  $\neg\textbf{do-fine}(\textbf{alex})$
  $\underline{\wedge\textbf{think}(\textbf{speaker}, \hat{}(\textbf{desire}(x, \hat{}(\textbf{do-fine}(x)) \wedge \neg\textbf{do-fine}(x))))}$

Interaction with truth conditional content

- Following Onea & Sailer (2013) for *all that* and Liu (2012); Sailer (2018) for PPIs
- Assertion: asserted content contradicts use-conditional content

(44) * Alex ist auf einen grünen Zweig gekommen.

'Alex is doing fine'

$\neg$**do-fine**(**alex**)$\underline{\wedge$**think**$(y, \hat{}(\ldots \wedge \neg$**do-fine**$(x))))}$

- Purpose clauses: Assumption that goal has not been reached yet compatible with speaker attitude

(45) ...um auf einen grünen Zweig zu kommen.

'...in order to do fine (in the future)'

- (46) Niemand will auf einen grünen Zweig kommen.

Unavailable reading: $\neg\exists x($**want**$(x, \hat{}$**do-fine**$(x)))$

Conflicting CI:

$\underline{\wedge\forall x($**think**$($**speaker**$, \hat{}($**desire**$(x, \hat{}$**do-fine**$(x)) \wedge \ldots))}$

Use-conditional content in semantic representations

- Not all NPIs are sensitive to use-conditional meaning.
- *je(mals)* 'ever'-type NPIs cannot be licensed through use-conditional meaning
- *Mucks*: can occur in contexts in which the negation is only contributed use-conditionally
- *grüner Zweig*: can occur in contexts in which there is no contradiction with the negation-containing use conditional meaning. Typically, these contexts contain a negation in the truth conditional meaninge.

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Threats as NPI-licensing context

- Linebarger (1980, 107): Examples of strong NPIs in conditionals interpreted conjunction with threat reading:

  (47) If you contribute a red cent to the Moonies, I'll hit you/ *I'll kiss you.

- Threat-effect does not depend on a single syntactic construction:

(48) a. Wenn du einen Mucks machst, verprügel ich dich.
'If you make a peep, I will beat you up.' (conditional)

b. Du machst einen Mucks und ich verprügel dich.
'You make a peep and I will beat you up.' (coordination)

c. Mach einen Mucks und ich verpügel dich.
'Make a peep and I will beat you up.'
(imperative in coordination of unlikes)

d. Ein Mucks und ich verprügel dich.
'One peep and I will beat you up'
(eventive noun in coordination of unlikes)

Undesirable consequence reading

- Undesirable consequence triggers a recommendation to avoid its cause.
- Inference not dependent on lexical/structural material but is a generally available conversationally adjusted interpretation.

$\Rightarrow$ Generalized Conversational Implicature (GCI)

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.

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

(50) a. If the old king has died of a heart attack and a republic has been declared then Tom will happy.

b. If a republic has been declared and the old king has died of a heart attack, then Tom will be unhappy.

(Carston & Hall, 2012, 67)

Generalized conversational implicature (GCI)

- Classical example:

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

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

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

- Cancellable:

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

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

Generalized conversational implicature (GCI)

(54) Wenn die Studies lange feiern, sind sie morgens müde.

'If the students party late, they are tired in the morning.'

inference: The students shouldn't party late.

- No projection in S-family contexts:

(55) Sind die Studies morgens müde, wenn sie lange feiern?

'Are the students tired in the morning if they party late?'

no inference: The students shouldn't party late.

- Cancellable:

(56) Wenn die Studies lange feiern, sind sie morgens im Kurs müde, aber sie müssen ja meistens nicht vor 10 an der Uni sein.

'...but usually they don't have to be at unversity before 10am.'

no inference: The students shouldn't party late.

- Calculable: (i) strengthening to a bi-implication; (ii) if the consequent is undesirable, the antecedent should be avoided

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

- Here: GCIs as optional rewriting rules on semantic representation
- $\alpha \mapsto_{GCI} \beta$: Optionally replace α from the primary content with $(\alpha \underset{\cdot\cdot\cdot}{\wedge} \beta)$ in the utterance content.
- GCI: $(\phi \wedge \psi) \mapsto_{GCI} (\underset{\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot}{\phi < \psi})$

(57) 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:
$((\textbf{drive}(\textbf{alex}) \wedge \textbf{drink}(\textbf{alex})) \underset{\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot}{\wedge \textbf{drive}(\textbf{alex}) < \textbf{drink}(\textbf{alex})}))$
$\rightarrow \textbf{keep-license}(\textbf{alex})$

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

- Here: GCIs as optional rewriting rules on semantic representation
- $\alpha \mapsto_{GCI} \beta$: Optionally replace α from the primary content with $(\alpha \wedge \underset{\dots}{\beta})$ in the utterance content.
- GCI: $(\phi \rightarrow \psi) \mapsto_{GCI} \underset{\dots\dots\dots\dots}{\mathbf{SHOULD}(\neg\phi)}$

(58) If Kim parties late, they will be tired
Primary content: $\mathbf{party\text{-}late}(\mathbf{kim}) \rightarrow \mathbf{tired}(\mathbf{kim})$
Utterance content:
$(\mathbf{party\text{-}late}(\mathbf{kim}) \rightarrow \mathbf{tired}(\mathbf{kim})) \wedge \underset{\dots\dots\dots\dots\dots\dots\dots\dots}{\mathbf{SHOULD}(\neg\mathbf{party\text{-}late}(\mathbf{kim}))}$

Commments on the GCI mechanism

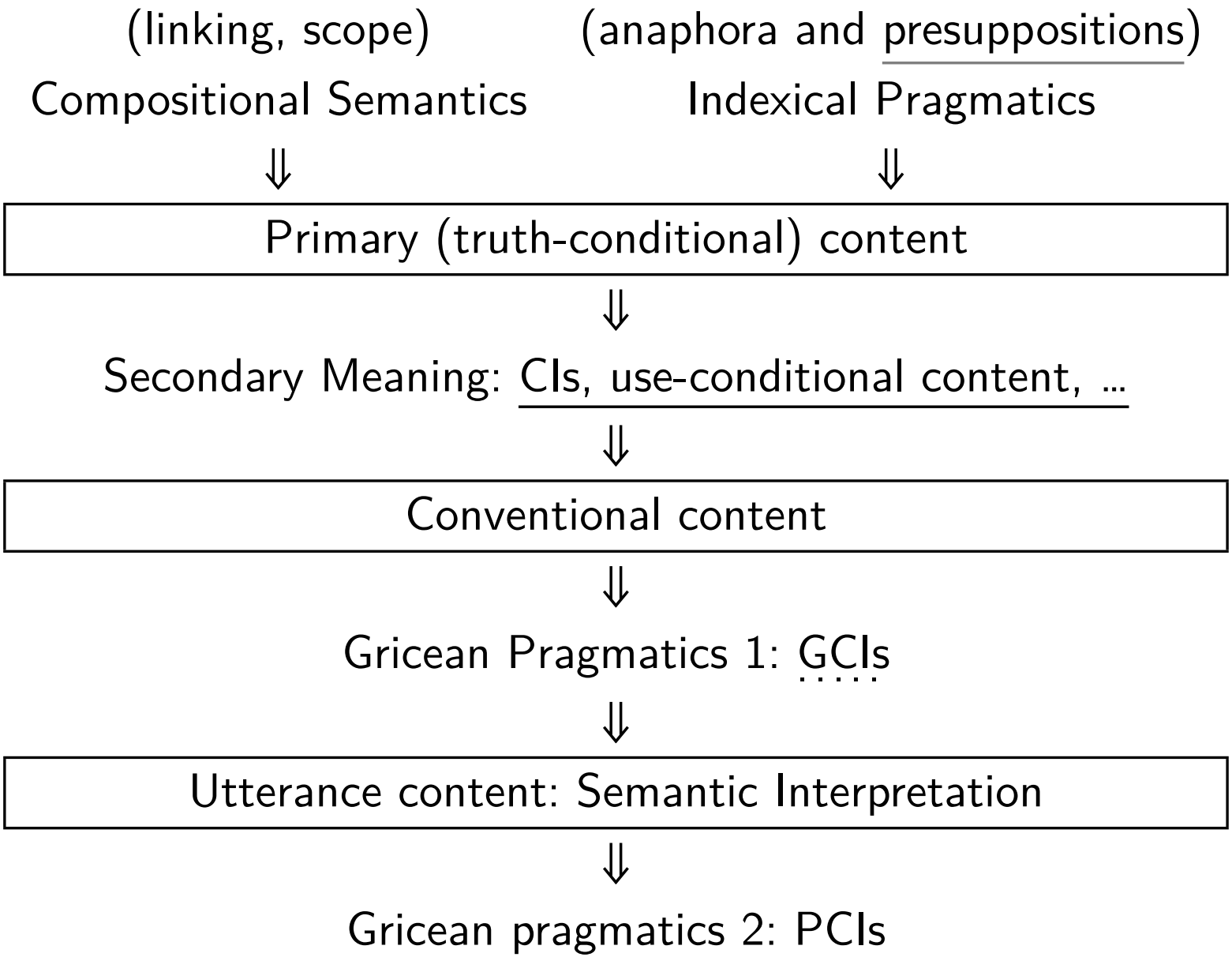
- Triggered at the level of the utterance, but "rewriting" in embedded position possible.
- Optional, but *Mucks* in non-negative sentences infelicitous if not applied.
- If not enforced: Determined by discourse adequacy
- Isn't this Maximize Presupposition (MP) (Heim, 1991)?

  (59) The/#A sun is shining.

  - Schlenker (2012): MP reducible to scalar implicature
  - Lauer (2016): MP follows from speaker preference strategies

  Global decision on local accommodation can be achieved through this mechanism.

Levinson's (2000) model with CIs added



Summary

- Inclusive picture of enriched semantics
- Classical semantic representation
- Enriched representation: Only conventionally associated, truth-conditionally relevant pragmatic content included
- NPIs:
  - Weak NPIs: Require a licenser in the primary content (includes presup.)
  - *Mucks*: Requires a strong licenser in the utterance content (includes presup., CIs, GCIs)
  - *grüner Zweig*: Contributes a negation in the CI content.

Summary

- NPI-licensing shows grammatical reflex of different levels of semantic representation. (primary content vs. utterance content)
- Licensers 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.

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What is an NPI?

- Distributional (Lichte, 2005; Fritzinger et al., 2010): An expression that usually/significantly co-occurs with a negative expression
- Scopal (Klima, 1964; Ladusaw, 1980; Linebarger, 1987): An expression that is in the scope of an NPI-licensing operator.
- Epiphenomenal (Krifka, 1994; Eckardt, 2005; Onea & Sailer, 2013): Negation-sensitivity follows from semantic/pragmatic properties of an expression and of contexts.
- Here:
  - distributional characterization empirically useful
  - scopal analysis for low scalar NPIs (*Mucks*, *ever*)
  - epiphenomenal approach to *grüner Zweig*, *all that*

$\Rightarrow$ Part of the semantic contribution of the NPI is in the scope of a negation/negation-like operator somewhere in the enriched semantic representation.

Conclusion

- NPI theory
  - *Mucks* licensed by a subset of the licensors of weak NPIs (*je* 'ever')
  - *Mucks* licensed in a superset of the semantic levels of weak NPIs
  - *grüner Zweig*: felicitous in non-contradicting environments
- 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
  - Occurrence of NPIs in non-negative environments additional empirical argument for grammatical relevance of CIs and, maybe, GCIs.

Next steps

- Collect more data on NPIs in "non-negative" context.
- Analysis of individual NPIs and "non-negative" contexts
- Interactional analysis of NPIs with minimal scalar endpoint semantics (*Mucks*)?
  - Suggestion in Rizea & Sailer (2020): Exhaustification operator contributed by NPI
  - Need: flexibility as to the truth/use conditional status.
  - No negation contributed by the NPI, but negation in the sem. representation enforced by exhaustivity
- Integration into a constraint-based framework of combinatorial semantics (Richter & Sailer, 2004; Sailer & Am-David, 2016)

Thank you for your attention!

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