Polarity sensitivity across categories

Perspectives from an alternative-based approach

Teodora Mihoc
UAB, Harvard U | tmihoc@fas.harvard.edu

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Outline

Natural languages and logical languages

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Montague:

Natural languages are logical.

- No important theoretical difference between logical and natural languages:
  - $a \vee b$ is T iff a is T or b is T or both are T.
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- Important differences between logical and natural languages:
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Grice: Natural languages are super(=beyond+very)logical.

- In a natural language dialogue, the listener reasons not just about what is said but also what is *not* said—that is, they reason about alternatives.

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Also for polarity sensitivity—our focus today.

Existing literature: Polarity sensitivity as a *supra*logical effect

(1)	a.	Jo called **un** student **oarecare**.	$\exists x \in D_e[S(x) \wedge C(j,x)]$
	b.	#Jo didn't call **un** student **oarecare**.	$^{\#}\neg\exists x \in D[S(x) \wedge C(j,x)]$
(2)	a.	#Jo called **any** student.	$^{\#}\exists x \in D_e[S(x) \wedge C(j,x)]$
	b.	Jo didn't call **any** student.	$\neg\exists x \in D_e[S(x) \wedge C(j,x)]$
(3)	a.	#Jo **lifted a finger** (to help).	$^{\#}H(j, d_{\min})$
	b.	Jo didn't **lift a finger** (to help).	$\neg H(j, d_{\min})$
(4)	a.	Everyone who **lifted a finger** to help was rewarded.	$\forall x[H(x, d_{\min}) \rightarrow R(x)]$
	b.	?Everyone who **lifted a finger** to help was wearing jeans.	$^{?}\forall x[H(x, d_{\min}) \rightarrow WJ(x)]$

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However, the literature since has proposed a variety of Grice-inspired solutions:
– Chierchia (2013) (based also on other refs. therein) proposes that NPIhood comes from silent exhaustification via O_{DA} (+ ban on G-trivial results) or from E_{SA} and PPIhood comes from exhaustification via O_{ExhDA} (+ ban on non-properly-stronger results).
– Crnič (2011) suggests evaluativity is just another reflex of exhaustification via E_{SA}.

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  - disjunction
  - numerals
  - adjectives
  - modals
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- However, it is not always clear whether these manifestations are truly related.
- Even when it feels like they must be, the existing alternative-based accounts often make subtly but substantially different assumptions about the truth conditions, alternatives, implicature calculation, and subsequent filters.
- As such, Grice's notion that supralogical is really superlogical is lost.

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As we will see, we will end up revising our understanding of these categories, but also of polarity sensitivity.

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(Typically available only for items from rich scales,) Exhaustification with E sometimes gives rise to logically / pragmatically impossible / implausible meanings. This is another source for NPIhood / the source for evaluativity.

Some illustrations

NPI *any*

(5) a. #Jo called any student. $^{\#}\exists x \in D_e[S(x) \wedge C(j,x)]$

$O_{DA+SA}(\exists x \in D_e \dots)$

$= \exists x \in D_e \cdots \wedge \neg\exists x \in D' \dots$

$= \bot$ (O leads to contradiction)

b. Jo didn't call any student. $\neg\exists x \in D_e[S(x) \wedge C(j,x)]$

$= O(\neg\exists x \in D_e \dots)$

$= \neg\exists x \in D_e \dots$ (O is vacuous)

polarity sensitivity due to obligatory $O_{ExhDA+SA}$ and general ban on LFs that lead to G-triviality

Some illustrations

PPI *un NP oarecare*

(6) a. Jo called un student oarecare. $\exists x \in D_e[S(x) \wedge C(j,x)]$

$O_{\text{ExhDA+SA}}\Box(\exists x \in D_e \ldots)$

$= \ldots$ (F(ree)C(hoice) effect)

b. $^{\#}$Jo didn't call un student oarecare. $^{\#}\neg\exists x \in D[S(x) \wedge C(j,x)]$

$O_{\text{ExhDA+SA}}(\neg\exists x \in D \ldots)$

$= \ldots$ (O_{ExhDA} does not lead to a properly stronger meaning)

polarity sensitivity due to obligatory ExhDA+SA and item-specific ban on LFs that do not lead to a properly stronger meaning

Some illustrations

NPI *lift a finger*

(7) a. #Jo lifted a finger (to help). $^{\#}H(j, d_{\min})$

$\mathrm{E}_{\mathrm{SA}} H(j, d_{\min})$

$= H(j, d_{\min}) \prec_{\mu} H(j, d_{\min+1})$ (impossible)

b. Jo didn't lift a finger (to help). $\neg H(j, d_{\min})$

$\mathrm{E}_{\mathrm{SA}}(\neg H(j, d_{\min}))$

$= \neg H(j, d_{\min}) \prec_{\mu} \neg H(j, d_{\min+1})$ (impossible)

polarity sensitivity due to obligatory E_{SA} and logical failure of probability relation between prejacent and the SA

Some illustrations

evaluative *lift a finger*

(8) a. Everyone who lifted a finger to help was rewarded. $\forall x[H(x, d_{\min}) \rightarrow R(x)]$

$E_{SA}\forall x[O_{SA}(H(x, d_{\min}) \rightarrow R(x)]$

$= \forall x[O_{SA}(H(x, d_{\min}) \rightarrow R(x)] \prec_{\mu} \forall x[O_{SA}(H(x, d_{\min+1}) \rightarrow R(x)]$

b. ?Everyone who lifted a finger to help was wearing jeans. $^{?}\forall x[H(x, d) \rightarrow W - J(x)]$

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$= \forall x[O_{SA}(H(x, d_{\min}) \rightarrow WJ(x)] \prec_{\mu} \forall x[O_{SA}(H(x, d_{\min+1}) \rightarrow WJ(x)]$

evaluativity due to obligatory E_{SA} relative to exactly understood SA, and pragmatic confusion about probability relation between the prejacent and the SA (because of non-availability of intuitions about helping and wearing jeans)

Outline

English *some*

English *some* is a PPI (Szabolcsi 2004, Nicolae 2012, Mihoc 2020, a.o.).

(9) a. Jo called **some** student. $\exists x \in D_e[S(x) \wedge C(j,x)]$

b. #Jo didn't call **some** student. $^{\#}\neg\exists x \in D_e[S(x) \wedge C(j,x)]$

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Challenges:

- This recipe derives a total FC effect in positive contexts, yet *some* is compatible with both negative and positive specificity.
- Obligatory O_{ExhDA} is usually assumed to be available only to items with overt FC morphology.

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Updates:

- Like other partial FC items, e.g., *algún*, *some* can choose to use just its SgDA. Additionally, it can also choose to use just its NonSgDA.
- FC morphology is not a prerequisite for obligatory O_{ExhDA}.

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Observations, open issues: In singular *some* positive specificity might remove the typical FC effect, but leave room for another.

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French *ou*

French *ou* is a PPI (Nicolae 2017).

(10) a. Jo a invité Alice ou Bob. $I(j,a) \vee I(j,b)$

b. #Jo n'a pas invité Alice ou Bob. $^{\#}\neg(I(j,a) \vee I(j,b))$

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Challenges:

- For disjunction, DA are usually derived structurally.
- The implementation of the recipe from Nicolae (2017) derives total FC and PPIhood in one fell swoop, whereas we know from indefinites that they should be kept apart.
- Disjunctions are ?never *partial* FC.

Updates:

- Disjunction is also actually based on a domain.

(11) Jo called a, b, …, or …

$$\bigvee_{x \in \{a,b,\ \ldots\}} C(j,x) \Leftrightarrow C(j,a) \vee C(j,b) \vee \ \ldots$$

Observations, open issues:

- In disjunction FC and PPIhood might also be independent.
- Why is disjunction ?always total FC?

English *or*

English *or* is not a PPI:

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Updates: None.

Observations: All previous updates are endorsed.

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English numerals, part 1

English *at least/most n* is a PPI (Geurts and Nouwen 2007 and refs. therein; see also Mihoc and Davidson 2021 for experimental evidence).

(13) a. Jo called at least 3 people. $max(\lambda n_d . \exists x[|x| = n \wedge P(x) \wedge C(j,x)]) \geq 3$

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Updates:

- *at least/most* (just like *more/less than*) make reference to a domain also:

(14) Jo called at least/most n people.
$\max(\lambda d . \exists x[|x| = d \wedge P(x) \wedge C(j,x)]) \in \overbrace{[\![\text{much/little}]\!](n)}^{\{..., n\}/\{n, ...\}}$

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Observations, open issues:

- The domain can be a derived domain.
- Why does PPIhood prefer SMNs?

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English *no more/less than n* (negated CMNs), *at least/most n* (SMNs) are evaluative.

(15) Jo solved no less than 3 problems.
⇝ That's many!

(16) a. Everyone who solved at least 3 problems passed. $\forall x[S(\geq 3) \rightarrow P]$
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- CMNs and SMNs do actually have classic, Horn-style SA (Mihoc 2021b).
- For the purpose of E_{SA}, CMNs and SMNs are in a sense end-of-scale (Mihoc 2021b).

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Observations, open issues:

- Coupled with the DA we derived earlier, the effect of the SA is toned down, explaining the issues the literature worried about.
- Why does evaluativity prefer non-strict-order meanings?

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Aspectual operators, part 1

English *still*, *yet*, *already*, *anymore* are all NPIs or PPIs (Israel 1997, Mihoc 2021a).

(17) a. Jo is **still** asleep.
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Challenges:

- No consensus on the truth conditions.

Updates:

- New truth conditions that make available a domain and a scale:

still/anymore:

$$\exists t \in \overbrace{\text{NEG}(t_0)}^{\{t_0, t_{+1}, \ldots\}}[t \in \tau(e)]$$

already/yet:

$$\exists t \in \overbrace{\text{POS}(t_0)}^{\{\ldots, t_{-1}, t_0\}}[t \in \tau(e)]$$

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Observations, open issues: Predictions in positive contexts not obviously correct.

Aspectual operators, part 2

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(18) Jo is still asleep.
⇝ She is asleep later than expected.

(19) a. Jo is still young.
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Aspectual operators, part 2

English *still, yet, already, anymore* are evaluative (Israel 1997, Mihoc 2021a, a.o.).

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Recipe based on E_{SA}: Works straightforwardly.

Challenges: Complicated predictions, need to check carefully.

Observations, open issues: Previous updates for non-end-of-scale items hold up!

Outline

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In some cases the similarity of the phenomena may be illusory, so nothing is lost, but in other cases we may be missing important generalizations.

The overarching concern behind the strong unifying stance behind this talk is to make sure that we don't.

Outlook

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There are many more categories that exhibit polarity sensitivity:

- modals

  (deontic *must*, *should*, *supposed to* scope above negation, but *have to* and *required to* scope under; epistemic *can* can scope under negation; see Iatridou and Zeijlstra 2013, Homer 2015 a.o.)

- adjectives

  (*# I slept much* vs. *I didn't sleep much*)

- bare nominals

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It might also turn out that, for example, polarity sensitivity in modals really has a different root altogether.

Nevertheless, with any attempt to unify, I believe we are bound to learn something.

Thank you!

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