

# Polarity and granularity properties of *some* polarity items and minimizers

Julie Goncharov and Lavi Wolf

A unified analysis of PPIs formed with *some*, such as *something*, *someone*, *some NP*, and nominal minimizers, such as *a damn thing*, *a red cent*, *a drop*, in a way that:

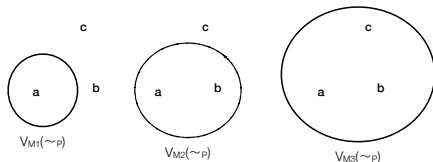
- captures the parallelism between *some* PPIs and nominal minimizers, setting them aside from other PSIs
- explains the additional inferences found with *some* PPIs (the presence of a more specific way of identification) and nominal minimizers (the minimality inference)
- accounts for polarity properties of *some* PPIs and nominal minimizers
- provides a way to reconcile referential and alternative-based approaches to PSIs

- PPIs and NPIs are heterogeneous classes:
  - strength of negative environment
  - locality condition
  - interaction with scope-bearing and other polarity sensitive items
- *some* PPIs and nominal minimizers (e.g., *a red cent, a word*) are mirror images of each other

| positive env. | DE/clause-external | AA/local |
|---------------|--------------------|----------|
| some          | some               | min      |
| almost        | any                | any      |

- *some* PPIs and nominal minimizers have granularity inferences (Strawson 1974; Krifka 1995)
- ①
  - a. #I was stung by some wasp (non-entomologist talk)
  - b. #I don't have a red cent on me (there are \$10 in my pocket)
- These inferences stem from the fundamental human ability to reason and communicate at different levels of contextual precision. For example, we can think of a road as a line when we are planning a trip, as a surface when we are driving, and as a volume when we are repairing potholes (Hobbs 1985).
- the granularity inferences can be captured using van Rooij's (2011) system according to which a context structure  $M'$  is more fine-grained compared to another context structure  $M$  with respect to some predicate  $P$  in case that there is a pair of individuals that is equally  $P$  in  $M$  but is not equally  $P$  in  $M'$

- *some* PPIs and nominal minimizers are indefinites with additional felicity requirements on the set of context structures:
  - *some* is felicitous only if there is a more fine-grained model in which the existential statement is verified
  - nominal minimizers require that in all more coarse-grained models (e.g., models in which the smallest amount of money counts as money, even one cent), the negated existential statement is true



- polarity properties of *some* PPIs and nominal minimizers can be explained in terms of granularity
- discussion: reconciliation of alternative-based and referential approaches to PSI licensing

# PPIs and NPIs are heterogeneous classes

Years of research dedicated to polarity sensitive items have shown that PPIs and NPIs are not homogeneous classes. They differ along the following dimensions:

- strength of negative environment
- locality condition
- interaction with other scope-bearing and polarity sensitive items

(Ladusaw 1980; Kadmon and Landman 1993; Jackendoff 1995; Wouden 1997; Zwarts 1998; Szabolcsi 2004; Gajewski 2007, 2011; Chierchia 2013; Collins and Postal 2014; Spector 2014)

# Mirror images

Some PPIs and nominal minimizers (*a red cent, a word, a drop*) are mirror images of each other:

- they are sensitive only to AA operators/environments
- they are (anti-)licensed locally
- under *not want*, they are sensitive to the interpretation of an action as intentional versus accidental

|               |                    |          |
|---------------|--------------------|----------|
| positive env. | DE/clause-external | AA/local |
| some          | some               | min      |



## Anti-additivity (AA):

- ②
  - a. Mary called someone.
  - b. Nobody called someone. (\*nobody > some)
  - c. At most five men called someone. (at most > some)
  
- ③
  - a. Mary gave a red cent to the beggar. ( $\neq$  idiom)
  - b. Nobody gave a red cent to the beggar. (= idiom)
  - c. Less than five people gave a red cent to the beggar. ( $\neq$  idiom)

Qualification: the restrictor of *every* and *if*-clauses are AA, but *some* PPIs are not anti-licensed and nominal minimizers are not licensed there

- ④
  - a. Every student who finished some exercises will pass the exam.
  - b. If Mary finished some exercises, she will pass the exam.
  
- ⑤
  - a. Everybody who gave a red cent to the beggar is kind. ( $\neq$  idiom)
  - b. If Mary gave a red cent to the beggar, she is kind. ( $\neq$  idiom)

Locality constraint (Szabolcsi 2004; Homer 2011; Collins and Postal 2014):

- ⑥
  - a. Mary doesn't have some money. (\*not > some)
  - b. John didn't say that Mary had some money. (not > some)
  
- ⑦
  - a. Mary doesn't have a red cent. (= idiom)
  - b. John didn't say that Mary had a red cent. (≠ idiom)

Qualification: neg-raising predicates (Fillmore 1963; Bartsch 1973)

- ⑧
  - a. John doesn't think/believe/expect that Mary left.
  - b.  $\rightsquigarrow$  John thinks/believes/expects that Mary didn't leave.
  
- ⑨
  - a. John doesn't think that Mary called someone. (not  $>$  some)
  - b. John doesn't think that Mary said a word at the party.

Sensitivity of *some* PPIs and nominal minimizers to the interpretation of an action as intentional versus accidental (Szabolcsi 2004, 2010; Goncharov 2020)

- 10
  - a. I don't want to call someone/eat something. (\*not > some)
  - b. I don't want to offend someone/break something. (not > some)
  
- 11
  - a. The company wants to harvest new ideas but doesn't want to spend any money/a red cent on this.
  - b. This investment is too risky. I don't want to lose any money/??a red cent on it.

*Any* and *almost* are mirror images of each other

- 12
  - a. \*Mary gave any money to the beggar.
  - b. Nobody gave any money to the beggar.
  - c. Less than five people gave any money to the beggar.
  
- 13
  - a. Mary solved almost all the problems on time.
  - b. ??Mary didn't solve almost all of the problems on time.
  - c. ??Few countries almost have full nuclear capacity.

*Any* and *almost* are mirror images of each other

- 14
  - a. I think that Mary solved almost all of the problems on time.
  - b. ??I don't think that Mary solved almost all of the problems on time.
  
- 15
  - a. Mary didn't say anything to the beggar.
  - b. I didn't say/believe that Mary said anything to the beggar.

# Mirror images

| positive env. | DE/clause-external | AA/local |
|---------------|--------------------|----------|
| some          | some               | min      |
| almost        | any                | any      |



Strawson (1974) observes that there is a difference between *a NP* and *some NP*:

- 16
  - a. I've been stung by a wasp.
  - b. #I've been stung by some wasp. *cf.* I've been stung by some insect.
  
- 17
  - a. She has just been delivered of a boy.
  - b. #She has just been delivered of some boy.

Strawson describes the difference between *a NP* and *some NP* as follows:

“the choice of ‘some’ rather than ‘a’ embodies what might be called an acknowledgment or recognition of the fact that the identification supplied, though perhaps the best the speaker can do, might be regarded as inadequate to the circumstances of the case; and that the kind of identification which the choice of ‘some’ rather than ‘a’ indicates or suggests inability to provide (though perhaps sometimes accompanied by indifference to or unconcern about) may be either further kind-identification or individual-identification.”

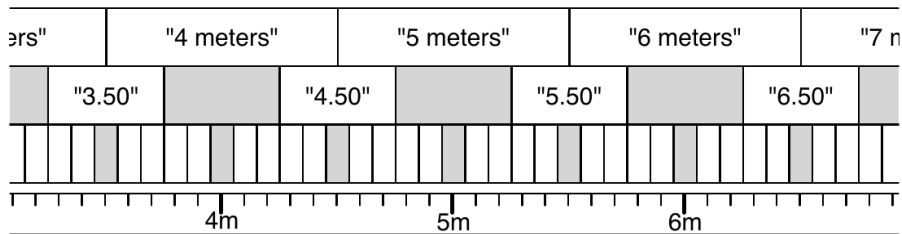
(Strawson 1974: 93)

Krifka 1995, a.o.: *a drop, a word, a syllable, a red cent* refer to minimal entities of a particular kind

- 18
  - a. John didn't drink a drop (of alcohol) for two days.
  - b. Mary didn't utter {a word / a syllable}.
  - c. John doesn't have a red cent.

# Background on granularity

Granularity is mainly used in the realm of vagueness and number words (Lewis 1979, Hobbs 1985, Krifka 2002, 2007, Sauerland and Stateva 2007, Sassoon and Zevakhina 2012, a.o.).



## Example of granularity: *late*

- John and Mary are to attend a meeting. John is 5 minutes late, Mary is 1 second late.
- The meeting is not very important  $\rightarrow$  the context structure  $M$  is more coarse-grained. John being 5 minutes late will have a similar consequence as Mary being 1 second late.
- The meeting is very important  $\rightarrow$  the context structure  $M$  is more fine-grained. John being 5 minutes late will have a very different consequence from Mary being 1 second late.

van Rooij (2011):

- Granularity is captured as a refinement of a context structure  $M = \langle I, C, V \rangle$ , where  $I$  is a set of individuals,  $C$  is a set of contexts, and  $V$  are valuation functions.
- An equivalence relation  $\sim_P$  with respect to some predicate  $P$ , which may come out very differently in different context structures.
- Let us assume a set of context structures  $\mathcal{M}$ , s.t. for all  $M, M' \in \mathcal{M}$ ,  $I_M = I_{M'}$ ,  $C_M = C_{M'}$ , but  $V_M \neq V_{M'}$ .

# Background on granularity

- A refinement relation is defined as follows:  $M'$  is a *refinement* of  $M$  w.r.t. some predicate  $P$  only if  $\exists x \in I$  s.t.  $M \models x \sim_P y$ , but  $M' \not\models x \sim_P y$

In prose: there is a pair of individuals that is equally  $P$  in a more coarse-grained model, but is not equally  $P$  in a more fine-grained model.

- The refinement thus defined has the following property:  
 $V_M(\sim_P) \supseteq V_{M'}(\sim_P)$ .

In prose: an equivalence class in a more coarse-grained model contains more elements of  $I$  than an equivalence class in a more fine-grained model.

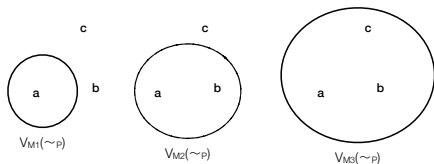
The additional inference of *some* observed in Strawson 1974 can be captured using the granularity model as follows:

- 19 Conditions for *some*  $P$ :
  - a.  $M \models \exists x \in I : P(x) \wedge Q(x)$
  - b. there is a more fine-grained w.r.t.  $P$  model  $M'$  in  $\mathcal{M}$ , s.t.  
 $M' \models \exists x \in I : P(x) \wedge Q(x)$

In prose: a sentence with *some* is true when (19)a holds. In addition, we say that *some* has the condition of use in (19)b. That is to say, it is felicitous only if there is a more fine-grained model in which the existential statement is verified.



- 20 #I was stung by some wasp (non-entomologist talk)



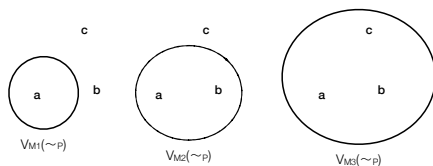
Infelicity arises in the later case since common discourse knowledge (part of the Common Ground knowledge, i.e. knowledge which is expected to be mutual to conversation participants) does not normally include types of wasps.

The minimality inference of nominal minimizers like *a red cent* can be captured by the following granularity condition:

- 21 Conditions for a  $P_{min}$  (minimizer):
  - a.  $M \models \neg \exists x \in I : P(x) \wedge Q(x)$
  - b. for all more coarse-grained w.r.t.  $P$  models  $M'$  in  $\mathcal{M}$ ,  
 $M' \models \neg \exists x \in I : P(x) \wedge Q(x)$

In prose: a sentence with nominal minimizers is true when (21)a holds. In addition, it must satisfy the condition of use in (21)b which requires that in all more coarse-grained models (e.g., models in which the smallest amount of money counts as money, even one cent), the negated existential statements is true.

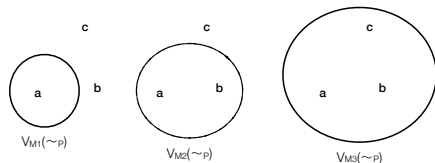
- 22 #I don't have a red cent on me (there are \$10 in my pocket)



Notice that (21)b is the negation of (19)b.

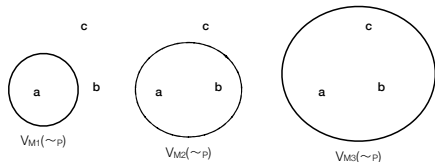
# Polarity properties

- 23
- a. Mary didn't call someone. (\*not > some)
  - b. At most five men called someone. (at most > some)
- 24
- a.  $M \models \neg \exists x \in I : P(x) \wedge Q(x)$
  - b. there is a more fine-grained w.r.t.  $P$  model  $M'$  in  $\mathcal{M}$ , s.t.  $M' \models \exists x \in I : P(x) \wedge Q(x)$



# Polarity properties

- 25
- a. Mary gave a red cent to the beggar. ( $\neq$  idiom)
  - b. Less than five people gave a red cent to the beggar. ( $\neq$  idiom)
- 26
- a.  $M \models \exists x \in I : P(x) \wedge Q(x)$
  - b. for all more coarse-grained w.r.t.  $P$  models  $M'$  in  $\mathcal{M}$ ,  
 $M' \models \neg \exists x \in I : P(x) \wedge Q(x)$



Aside:

- Anti-additivity vs. anti-veridicality: for natural language, the predictions differ for the restrictor of *every* and *if*-clauses. Assuming Gajewski 2011 and Chierchia 2013, the predictions are the same.
- Locality: syntax or QR (interesting recent proposal in Kuhn 2021)

Reconciling referential and alternative-based approaches:

- Referential approaches (Li 1992, Lin 1998, Matthewson 1998, Giannakidou 1998 et seq., Zeijlstra to appear, a.o.)
- 27 Non-entailment of existence condition: the use of an NPI is felicitous iff the proposition in which it appears does not entail existence of a referent satisfying its description
- 28 Non-entailment of non-existence condition: the use of a PPI is not felicitous iff the proposition in which it appears entails non-existence of a referent satisfying its description

- Alternative-based approaches (Krifka 1995, Chierchia 2004, 2006, 2011, 2013; Nicolae 2012, a.o.)

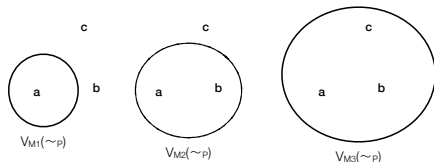
- 29
  - a. anything =  $\exists x \in D : x$  is a thing
  - b. ALTs:  $\{ \exists x \in D'. D' \subset D \text{ and } x \text{ is a thing} \}$

- 30
  - a. something =  $\exists x \in D : x$  is a thing
  - b. ALTs:  $\{ \exists x \in D'. D' \supset D \text{ and } x \text{ is a thing} \}$

- 31 EVEN( $p$ ) =  $p \wedge \forall q \in \text{ALT}(p)[p \text{ is less likely than } q]$  (where  $p$  is less likely than  $q$  if  $p$  entails  $q$  and  $q$  does not entail  $p$ )



- 32 Conditions for *some P*:
- a.  $M \models \exists x \in I : P(x) \wedge Q(x)$
  - b. there is a more fine-grained w.r.t.  $P$  model  $M'$  in  $\mathcal{M}$ , s.t.  
 $M' \models \exists x \in I : P(x) \wedge Q(x)$
- 33 Conditions for a  $P_{min}$  (minimizer):
- a.  $M \models \neg \exists x \in I : P(x) \wedge Q(x)$
  - b. for all more coarse-grained w.r.t.  $P$  models  $M'$  in  $\mathcal{M}$ ,  
 $M' \models \neg \exists x \in I : P(x) \wedge Q(x)$



# Selected references

- Bartsch, Renate. 1973. "Negative Transportation Gibt Es Nicht." *Linguistische Berichte* 27: 1–7.
- Chierchia, Gennaro. 2013. *Logic in Grammar: Polarity, Free Choice, and Intervention*. Oxford: Oxford University Press.
- Collins, Chris, and Paul M. Postal. 2014. *Classical NEG Raising*. Cambridge: The MIT Press.
- Fillmore, Charles F. 1963. "The Position of Embedding Transformations in a Grammar." *Word* 19: 208–31.
- Gajewski, Jon. 2007. "Neg-Raising and Polarity." *Linguistics and Philosophy* 30: 289–328.
- . 2011. "Licensing Strong NPIs." *Natural Language Semantics* 19: 109–48.
- Goncharov, Julie. 2020. "The Dynamic Presupposition of 'Want'." *Proceedings of SALT 30*.
- Hobbs, Jarry R. 1985. "Granularity." In *Proceedings of the International Joint Conference on Artificial Intelligence*, 1–4.
- Homer, Vincent. 2011. "Polarity and Modality." PhD thesis, University of California Los Angeles.
- Jackendoff, Ray. 1995. "The Conceptual Structure of Intending and Volitional Action." In *Evolution and Revolution in Linguistic Theory*, edited by Héctor Campos and Paula Kempchinsky, 198–227. Washington, D.C.: Georgetown University Press.
- Kadmon, Nirit, and Fred Landman. 1993. "Any." *Linguistics and Philosophy* 16 (4): 353–422.  
<http://www.jstor.org/stable/25001516>.
- Krifka, Manfred. 1995. "The Semantics and Pragmatics of Polarity Items." *Linguistic Analysis* 25: 209–57.
- Ladusaw, William A. 1980. *Polarity Sensitivity as Inherent Scope Relations*. New York: Garland.
- Spector, Benjamin. 2014. "Global Positive Polarity Items and Obligatory Exhaustivity." *Semantics and Pragmatics* 7: 1–61.
- Strawson, Peter F. 1974. *Subject and Predicate in Logic and Grammar*. London: Methuen.
- Szabolcsi, Anna. 2004. "Positive Polarity – Negative Polarity." *Natural Language and Linguistic Theory* 22: 409–52.