

# On Reading-Dependent Licensing of Strong NPI

Manfred Sailer

Negative Polarity Items (NPIs) (such as *ever*, *lift a finger*) are expressions whose distribution is restricted to sentences that provide a negation or some other appropriate licenser. Some NPIs, *lift a finger* and *so much as* impose stricter occurrence restrictions than others (*ever*). I will address two sets of data in which the acceptability of an NPI depends on the way in which the sentence is interpreted: One where the NPI is possible only in law-like interpretation of the sentence and one where the appropriateness of the NPI depends on whether a determiner is interpreted proportionally or cardinally. I will argue that the data are problematic for entailment-based and pragmatic approaches to NPI licensing and, instead, propose a representational theory that is based on *Discourse Representation Theory* (DRT). The contrast between cardinal and proportional determiners will be related to the DRT treatment of proportional determiners in terms of duplex conditions. Since DRT assumes an integrated treatment of asserted and presupposed semantic contribution, it will be possible to derive the behavior of law-like statements as well.

**Data** Heim (1984) and Israel (2004) show that strong NPIs are licensed in the restrictor of universals and in the antecedent of a conditional in law-like statements (1-a), but not in more episodic statements (b), while weak NPIs can occur in both types (c).

- (1) a. Every restaurant that charges so much as a dime for iceberg lettuce should be shut down.  
If a restaurant charges so much as a dime for iceberg lettuce, it should be shut down.  
b. \*?Every restaurant that charges so much as a dime for iceberg lettuce happens to have four stars in the handbook.  
If a restaurant charges so much as a dime for iceberg lettuce, it has four stars in the handbook.  
c. Every restaurant that I've ever been to should be shut down./happens to have four stars . . .

Israel (1995) argues with (2) that while strong NPIs are not fully felicitous in episodic sentences like (1-b), they are still considerably better in the restrictor of a proportional quantifier than in the restrictor of a cardinal quantifier. To differentiate between the readings, Israel uses the partitive versions *some of the/many of the* for the unambiguously proportional reading and the unstressed versions *sm* and *mny* for the unambiguously cardinal reading.

- (2) ?Sóme/ ?Mány of the guests/ \*sm/ \*mny guests who ate so much as a bite of trout got sick. These observations are at odds with an entailment-based approach to NPI-licensing because neither *some* nor *many* are downward-entailing in their restrictor. Israel (1995) tries to assimilate the NPI licensing in the restrictor of *some/many (of the)* to the NPI licensing in (1). He assumes that (2) is true iff the sentence *if G is a guest who ate trout, G got sick* is true for a large number of possible values for *G*. Unfortunately he does not work out the details of such an analysis.

Israel (2004) does not address *some* and *many*, but argues that *few* and *most* can provide contextually determined downward-entailing pragmatic inferences. However, the proportional-cardinal distinction cannot be derived on the basis of such pragmatic inferences. Assume that there is a scale of puzzles ranked by their difficulty. In (3) the pragmatic inference is valid for both, the proportional determiner *most* and the unambiguously cardinal determiner *several*. Nonetheless, a strong NPI is not possible with *several*.

- (3) a. Most/several students who could solve the hard puzzles had problems with the exam.  
→ Most/several students who could solve the easy puzzles had problems with the exam.  
b. Most/\*Several guests who ate so much as a bite of trout got sick.

**Discourse Representation Theory** Partee (1988) argues that a straightforward way to capture the differences between cardinal and proportional determiners is by representing the latter with a duplex condition in the semantic representation, whereas the former are treated analogously to indefinites. For illustration, (4-a) shows the DRS of a sentence containing a cardinal use of *many*, and (4-b) the DRS for a proportional use (*k* is a contextual threshold of what counts as many).

- (4) a. cardinal reading:  $[X | X = \Sigma x [x \text{ guest}(x), \dots], \text{card}(X) \geq k, \text{get-sick}(X)]$   
b. proportional reading:  $[\emptyset | \text{many}_k x [x \text{ guest}(x), \dots] [\emptyset | \text{get-sick}(x)]]$

Duplex conditions occur not only with proportional determiners but also in the DRT analysis of conditionals and universals. In all cases of NPI-licensing considered here, the NPI is contained in the first DRS in a duplex condition. We can express this in a uniform condition on NPI-licensing:

(5) NPI-licensing: An NPI must occur in the first box of a duplex condition.

With (5), a DRT account expresses structurally the intuition in (Israel 1995) that the NPI-licensing in (1) and (2) is due to the same factors. Needless to say, the scope of negation is another instance of a first box in a duplex condition, since  $\neg K$  is simply  $K \rightarrow \mathbf{false}$ .

**Presuppositions** The generalization in (5) does not yet account for difference between weak and strong NPIs in (1). In neutral contexts, a proportional quantifier usually presupposes a non-empty restrictor set. I assume that it is a characteristic property of the law-like reading that this presupposition is not present. This can be shown inter alia with the possibility of using inconsistent restrictor sets in law-like statements in the area of mathematics as in (6-a). Similarly, it is possible to express generalizations about situations for which no existential commitment is made, (6-b).

(6) a. Every odd multiple of 6 is also a multiple of 3.

b. If you walk across a highway, you get hit by a car.

The treatment of presupposition in (Kamp 2001) assumes two levels of representation: First, a *preliminary representation* which comprises the asserted content and a set of unresolved presuppositions, and second, a representation in which all presuppositions are resolved and integrated into the final DRS of a sentence. (7) sketches the preliminary representation of the sentences in (1). The law-like reading in (7-a) has an empty presupposition set. The episodic reading in (7-b), presupposes the existence of restaurants with the described property.

(7) a.  $\langle \{\}, [\emptyset | [x | \mathbf{rest.}(x), \mathbf{NPI}, \dots] \Rightarrow [\emptyset | \mathbf{should-be-shut-down}(x)] ] \rangle$

b.  $\langle \{ [x | \mathbf{rest.}(x), \mathbf{NPI}, \dots] \}, [\emptyset | [x | \mathbf{rest.}(x), \mathbf{NPI}, \dots] \Rightarrow [\emptyset | \mathbf{4-stars}(x)] ] \rangle$

I assume that NPI licensing is checked at the level of preliminary representation. Strong NPIs require that every occurrence of their content must obey (5), whereas for weak NPIs, it is enough if they are licensed in the non-presuppositional part of the preliminary representation. In both DRSs in (7) the non-presuppositional content contains a licensed occurrence of the NPI. Since this is the only occurrence of the NPI in (7-a), a strong NPI is possible. In (7-b), there is an existential presupposition containing sub-DRS with the NPI. Consequently, only the weak NPI is fully acceptable. The existence presupposition of the restrictor of proportional determiners is responsible for the '?' judgements in (2).

**Conclusion** I showed that the standard DRT machinery can be used to capture the phenomenon that strong NPIs may occur in certain environments only under particular readings. This phenomenon superficially seems to favor pragmatic accounts of NPI licensing. However, it could be shown that entailment-based and pragmatic accounts both run into problems when applied to data with strong NPIs in the restrictor of proportional determiners. The DRT approach is immune to these problems. Furthermore DRT's integration of presuppositions gives us just enough pragmatics inside the semantic representations to relate the pragmatic effect of law-like readings with their NPI-licensing potential.

My analysis is an extension of (Sailer 2007), which captures the basic cases of NPI licensing.

## References

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