

Universal Quantification and NPI licensing

As is known, the universal quantifier $\forall x(P_x \rightarrow Q_x)$ licenses NPIs in its restrictor P , which according to Ladusaw's (1979) thesis, is due to the downward-entailingness (DE) of this position. In this paper, I examine other NPI licensors including *no*, *only*, and conditionals, and propose to reduce them to universal quantification that licenses NPIs in the restrictor only if: one, the restrictor stays in an essential relation with the scope, which I formalize as $\forall x(P_x \sqsubseteq \rightarrow Q_x)$; second, within the restrictor containing more predicates, the position where NPIs occur must be prominently asserted. Let's discuss them in turn.

Dayal (1995) makes the distinction between an essential/accidental reading for *every* as in (1). This distinction seems also to capture the fact that it is the essential reading of the universal quantifier that is capable of licensing NPIs, or in other words, when the restrictor and the scope is inherently related (Heim 1984). Sailer (to appear) notes that this is an issue of the strength of NPIs: strong NPIs e.g. *so much as* in (2) from Heim (1984) require that the sentence have a law-like rather than episodic reading but weak ones like *ever* do not.

- (1) Every student who is in Mary's class is working on polarity items.
 - a. Every student in Mary's class, by virtue of being in her class, is working on polarity items. (essential)
 - b. It happens to be true of every student in Mary's class that s/he is working on polarity items. (accidental)

- (2) a. Every restaurant that charges *so much as* a dime for iceberg lettuce ought to be closed down. (law-like/essential)
 - b. ??Every restaurant that charges *so much as* a dime for iceberg actually has four stars in the handbook. (episodic/accidental)

Disregarding the issue of strength, this means that although *every* is semantically DE (actually even antiadditive - AA), this might not be the necessary condition for NPI licensing. At least certain NPIs are licensed in the restrictor only if $\forall x(P_x \sqsubseteq \rightarrow Q_x)$: to understand this, we can take the implication as a two-place predicate such as $R(P, Q)$ and the necessity operator signals that this relation is essential in the sense not only that if P , then Q , but that Q will be necessarily true in virtue of P .

The logic of *no* N , conditionals and *only* is closely related to *every*. *No NP VP* is the right internal negation (de Mey 1991) of *every*, i.e. *every NP* \neg *VP*, which makes both its restrictor and its scope downward entailing. Conditionals are universal quantifiers if we render their semantics roughly as $\forall w(P@w \rightarrow Q@w)$. *Only* is the left and right internal negation of *every*, therefore the converse of *every*. Correspondingly, they show similar requirements as *every* in terms of NPI licensing, namely, they can license NPIs in the restrictor only when the restrictor is essential to the scope. Consider: in (3b), the lack of an essential relation between the antecedent and the consequent makes the presence of the NPI unacceptable, while (3a) licenses the NPI as $\forall w(P@w \sqsubseteq \rightarrow Q@w)$.

- (3) a. If you *ever* date my daughter, I will kill you. (If you date my daughter, I will kill you for that.)

- b. If you **ever* come to my office, we can have tea together. (*If you come to my office, we can have tea together because of that.)

If the restrictor takes more predicates than one, the position where NPIs occur should be locally - within the restrictor - prominently asserted. Horn (2004) proposes for the case of *only* that it is not the DE, but downward assertion that is the key word for NPI licensing. Following him, the sentence in (4) is semantically an exponible but only (4a) is asserted whereas (4b) is ‘inertly asserted’. It seems plausible to me that whatever the contribution by the NPI *lifted a finger* is, this contribution is not made to the proposition in (4b). This is, the domain widening function (Kadmon and Landman 1993) of minimizer NPIs that occur with *only* only apply to updating the truth conditions of the asserted proposition that (4a) for example.

- (4) Only Peter *lifted a finger* to help.
 - a. Among the relevant people, nobody other than Peter helped. (antiadditive)
 - b. Peter helped. (non-monotonic¹)

These data shed light on our understanding of (1)-(2), namely, that in both (1a) and (1b), the content by the relative clause is prominent at the NP node. For example, although (2a) has the LF, for simplicity, $\forall x((N_x \wedge RC_x) \sqsubseteq \rightarrow Q_x)$ (N for restaurant, RC for the relative clause, and Q for the scope), it is the RC_x position that licenses NPIs, and this content is the core in the essential relation with Q_x . To elaborate, if we zoom in the asserted content in the restrictor, N_x is only inertly asserted while RC_x is asserted. In general, however many predicates the restrictor contains, NPIs occur only in those that decisively make the essential relation to the content in the scope hold.

References

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¹Atlas (1993) suggests that *only* proper names is non-monotonic but pseudo-antiadditive. Instead, I follow Horn (2004) to propose that it is non-monotonic inert-assertorically but antiadditive assertorically, both of which is an entailment of the sentence.