Self-interveners: the case of universal quantifier PPIs
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I. Following recent lines of thinking (Kadmon & Landman 1993, Krifka 1995 and Chiercha 2006), Negative Polarity Items (NPIs) are only fine in Downward Entailing (DE) contexts, since outside such contexts their semantics would give rise to a contradiction. According to Chierchia's (2006) implementation, this is due to the fact that NPIs are equipped with a syntactic feature $[\sigma]$ that ensures obligatory introduction of domain alternatives; and that this feature must be checked by a covert exhaustifier EXH. **II.** A potential problem for this approach is that by the same logic a universal quantifier (*all*, *everybody* or *everything*) that carries a feature $[\sigma]$ should be a Positive Polarity Item (PPI). Take the imaginary word *pevery* that would be semantically identical to English *every* next to being equipped with this feature $[\sigma]$. A negative sentence containing *pevery*, like (1), would have the syntax as in (2) and therefore the denotation as in (3), a clear contradiction.

(1)   I did not read pevery book

(2)   [EXH$_{[\sigma]}$ [I did not read [pevery book]$_{[\sigma]}$]]

(3) $\neg\forall$x.[x$\in$\{a,b,c\} $\rightarrow$ read(I, x)] & $\neg\neg\forall$x.[x$\in$\{a,b,c\} $\rightarrow$ read(I, x)]

But no language in the world seems to have a word meaning *all*, *everybody* or *everything* that is a PPI. Within the domain of quantifiers over individuals, most PPIs are actually existential quantifiers (e.g. English *some*), never universal quantifiers. This would suggest that for some unknown reason the approach by Kadmon & Landman, Krifka and Chiercha would not extend to universals. **III.** However, in the domain of modals, universal quantifier PPIs are indeed attested. As has been pointed out by Israel (1996), Iatridou & Zeijlstra (2013) and Homer (t.a.) universal modals that take wide scope with respect to negation, like English *must*, *should* or *ought to*, are indeed PPIs. The existence of such universal PPI modals thus forms evidence in favour of the approach that takes polarity effects to result from logical contradictions: the predicted elements are indeed attested. But it gives rise to a new question as well: <u>why have universal quantifier PPIs only been attested in the domain of modal auxiliaries and never in the domain of quantifiers over individuals?</u> **IV.** In this paper I argue that the reason lies in the syntactic differences rather than the semantic differences between modals (quantifiers over possible worlds) and quantifiers over individuals, in particular in their syntactic position in the sentence. More concretely, I argue that both universal modals and universal quantifiers over individuals with a feature $[\sigma]$ can be attested, but that the syntactic properties of universal quantifiers over individuals with such a feature may obscure their diagnostic PPI properties. To see, this, take again the scopal ordering of a universal quantifier with a feature $[\sigma]$, negation and the covert exhaustifier that gives rise to the logical contradiction. That is the ordering in (4).

(4) $^{\#}$… EXH > NEG > $\forall_{[\sigma]}$

If negation intervenes between the exhaustifier and the universal, a contraction arises. But nothing guarantees that a universal quantifier with a feature $[\sigma]$ (henceforward $\forall_{[\sigma]}$) has its exhaustifier scope higher than the negation: the feature $[\sigma]$ only requires that the exhaustifier c-commands the $\forall_{[\sigma]}$ and therefore has scope over it, but does not require that it has no immediate scope. An alternative underlying syntactic configuration for (1) would be (5). But (5) does not give rise to a logical contradiction! In (5) the proposition *I read pevery book*, denoting $\forall$x.[x$\in$\{a,b,c\} $\rightarrow$ read(I, x)], would be exhaustified (a vacuous operation, since it is already stronger than any of its alternatives) *before* it gets negated. The denotation of (5) is then just simply (6). The exhaustifier actually acts as an intervener.

(5)   [NOT [EXH$_{[\sigma]}$ [I read [pevery book]$_{[\sigma]}$]]]

(6) $\neg\forall$x.[x$\in$\{a,b,c\} $\rightarrow$ read(I, x)]

Consequently, A universal PPI (or to be more precise: a universal quantifier that obligatorily introduces domain alternatives and that must be exhaustified) is fine in a negative / DE context as long as the exhaustifier is in between the negation or any other downward entailing operator and the universal quantifier itself. <u>Universal quantifier PPIs may thus appear under negation without being ungrammatical and therefore being unrecognizable as such</u>. **V.** The recognisability of universal PPIs, then, depends on the possibility of an intervening EXH. In order to assess the existence of universal PPIs, the question arises as to exactly when EXH may intervene. In this we follow Zeijlstra (2012), who for a number of different

phenomena has argued that covert operators in general must be included in a position immediately c-commanding the highest *overt* marker of an abstract operator, in casu $\forall_{[\sigma]}$. This entails that the only orders where $\forall_{[\sigma]}$ may not appear under the scope of negation are exactly those cases where either $\forall_{[\sigma]}$ precedes negation or where it forms a morpho-syntactic unit with it. The modals in (7), thus, cannot reconstruct under negation (as this would yield the contradictory scopal order EXH>NEG>MUST), but a universal quantifier in object position, as in (8), may very well be a PPI and still be under the scope of negation, since EXH may intervene.

(7)   a.   John mustn't leave   [EXH must precede *must*, so it cannot intervene]

        b.   Juan no-debe ir   [EXH must precede *debe*, but it cannot intervene

            Juan neg-must go   between the negation and *debe*, since *no* is a clitic]

(8)   John didn't see everybody   [EXH can intervene between *didn't* and *everybody*]

On the basis of examples where a morphologically independent negation precedes a universal quantifier one cannot tell whether a universal quantifier like *everybody* is a PPI or not. **VI.** But how can we tell whether some universal quantifier over individuals is a PPI or not (i.e. whether it carries a feature [σ])? The only proper way to diagnose this would be by investigating its scopal behavior when it precedes negation. In that case the surface scope order would be EXH > $\forall_{[\sigma]}$ > NEG. Under this configuration, the universal quantifier cannot reconstruct below negation (as this would give rise to a logical contradiction). If the universal quantifier were lacking [σ], it would be able to reconstruct below negation. Following this line of reasoning, we can actually establish that English *everybody* is not a PPI, but that Dutch *iedereen* ('everybody') is a PPI, a novel observation to the best of my knowledge. In English (and most other languages), for almost all speakers a universal quantifier that precedes negation may reconstruct under negation. However, for most speakers of Dutch (and several Northern German varieties), this reconstructed reading is not available (cf. Zeijlstra 2004, Abels & Marti 2011). This observation has never received a satisfactory explanation, but directly follows once universal quantifiers in Dutch are taken to be PPIs.

(9)   a.   Everybody didn't leave   ∀>¬;¬>∀

        b.   Iedereen vertrok niet (Everybody left not)   ∀>¬;*¬>∀

These data thus show that universal quantifier PPIs can actually even be attested in the domain of quantifiers over individuals; they are just not that easily recognizable. **VII.** Further evidence for this analysis comes from language like Dutch and German, where in main clauses a modal precedes negation, but where in subordinate clauses it follows the negation. The prediction that this analysis makes is that modals that take scope over negation in main clauses (due the their PPI-status), should be able to take scope below negation in a subordinate clause. This prediction is born out, as the data in (10) show.

(10)   a.   *Jan moet niet vertrekken, maar het mag wel

            Jan must neg leave, but it may prt   'John mustn't leave, but it is allowed'

        b.   Ik weet dat Jan niet moet vertrekken, maar dat het wel mag

            I know that Jan neg must leave, but that it prt may

            'I know that John doesn't have to leave, but that it is allowed'

VIII. To conclude, universal quantifier PPIs do exist, both in the domain of quantifiers over individuals and in the domain of quantifiers over possible worlds, as is predicted by the Kadman&Landman-Krifka-Chierchia approach to NPI-hood. However, since the exhaustifier that is induced by these PPIs can act as an intervener between the PPI and its anti-licenser, universal quantifier PPIs often appear in disguise. Their PPI-like behaviour only becomes visible once they morpho-syntactically precede their anti-licenser.

Selected references: Abels, K. & L. Marti. (2010). 'A unified approach to split scope.' In *Natural Language Semantics 18*: 435-170. - Chierchia, G. (2006). 'Broaden your views. Implicatures of domain widening and the "Logicality" of language.' *Linguistic Inquiry 37*: 535-590. - Homer, V. (t.a.). 'Neg-raising and Positive Polarity: The View from Modals.' *Semantics & Pragmatics*. - Iatridou, S. & H. Zeijlstra (2013). 'Negation, polarity and deontic modals.' *Linguistic Inquiry 4:* 529-568. - Kadmon, N. & F. Landman (1993). 'Any.' In *Linguistics and Philosophy 16*: 353-422. - Zeijlstra, H. (2012). ,There is only one way to Agree.' *The Linguistic Review 29*: 491-539.