Horn clauses and strict NPIs under negated matrix clauses

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Neg Raising has been considered a key phenomenon to illustrate grammatical reflexes of semantic/pragmatic properties: On the meaning side, a negation that appears in the matrix clause is apperantly interpreted in the embedded clause, as indicated in (1).

(1) NP doesn't V [S] ⇒ NP Vs [not S]
     for ex.: I don't think [Chris won] ⇒ I think [Chris didn't win].

On the form side, we find two prominent phenomena: First, the licensing of strict negative polarity items, as in (2a). Second, embedded "negative" inversion, so-called *Horn clauses*, as in (2b). This form-meaning correlation constitutes the basis of syntactic, semantic, and pragmatic accounts of Neg Raising.

(2) a. Strict NPI: I *(don't) think [Chris gives a damn$_s$].
     b. Horn clause: I *(don't) think [that ever before have I read such a great paper].

However, this correlation has been challenged on the basis of corpus data. Horn (2014) finds instances Horn clauses and strict NPIs with non-factive negated matrix predicates other than Neg Raising predicates, such as non-factive uses of *know* in (3). Hoeksema (2017) explores the properties of negated matrix predicates that allow for embedded strict NPIs further. These papers show that Neg Raising is only a sufficient, but not a necessary condition for long-distance licensing of strict NPIs and Horn Clauses.

(3) a. Strict NPI: I don't know [that this is all that$_s$ complicated].
     b. Horn clause: I don't know [that ever before had all three boys napped simultaneously].

One note on the terminology: I distinguish three licensing dimensions for NPIs: First, Strong NPIs vs. weak NPIs (van der Wouden, 1997): Strong NPIs require a verbal negation or a negative indefinite as licenser, but not a weak licenser like *not every* or *few*, see (4).

(4) a. Strong NPI: No one/*Not everyone lifted a finger to help Alex.
     b. Weak NPI: Noone/Not everyone has ever helped Alex.

Second, strict vs. non-strict NPIs (Hoeksema, 2017): Non-strict NPIs can occur in complement clauses of negated factive predicates, see (5).

(5) a. he didn't know [that the building had ever been used as a dry cleaner …] (English Trends)
     b. *he didn't know [that the building was all that old].

Third, to use the terms from Sedivy (1990), ⌜regular NPIs⌝^{r} vs. ⌜lexical NPIs⌝^{l}: Lexical NPIs can be licensed pragmatically, for example in (6a) to reject the claim that Cynthia never lifts a finger. Regular NPIs require an overt licenser, i.e., ⌜at all⌝^{l} is not licensed in (6b) even in a context where it is claimed that Bert doesn't care about the homeless.

(6) a. Cynthia DOES ⌜lift a finger⌝^{l} when there is work to be done.
     b. *Bert DOES care about the homeless ⌜at all⌝^{r}. (Sedivy, 1990, 98)

To indicate some combinations of NPI types, ⌜*ever*⌝^{r} is a weak, non-strict, regular NPI. In its NPI-use, ⌜*need*⌝^{r} is weak, regular and strict. The minimizier ⌜*lift a finger*⌝^{l} is strong, lexical, and strict. From here on, I will typographically indicate all three NPI-licensing dimensions.

In this paper, I will propose that Negative Inversion/Horn clauses (NI/HC) are **construction-level weak regular strict NPIs**. I will also show that a surface scope analysis of matrix negation can lead to the correct interpretations and still account for the occurrence of strict NPIs and NI/HC. This can be considered an HPSG rendering of insights expressed in Zeijlstra (2017), though my finer distinction of NPI types, analytic details, and fundamental differences in the frameworks might obscure the similarity between the two papers.

1 Empirical generalization and semantic analysis

1.1 NI/HC is a weak regular strict NPI

NI occurs primarily with a negative fronted constituent, but also with *only* and other known licensers of NPIs (Büring, 2004), see (7b), including weak licensers such as *not every*, (7c).

(7) a. NI: Not a single paper did he finish on time.
         Strict NPI: With careful handling not a single drop ⌜need⌝ʳ be wasted.
     b. NI: Only two of them did he find useful.
         Strict NPI: …only one application form ⌜need⌝ʳ be filled out
     c. NI: Not every time did his arrow hit the mark.
         Strict NPI: Not every lionfish ⌜need⌝ʳ be removed.

Hoeksema (2017) and Horn (2014) show that strict NPIs and HCs can occur not just with negated Neg Raising predicates but also with other non-factive matrix predicates, as with non-fractive *know* in (8). However, neither strict NPIs nor Horn clauses occur with factive predicates and speech reports, see (9).

(8) a. HC: I don't know [that ever before had all three boys slept simultaneously]. (Horn, 2014)
     b. Strict NPI: I don't know that it ⌜need⌝ʳ create any serious difficulties.

(9) a. HC: *Alex didn't realize/report [that ever before had all three boys slept simultaneously].
     b. Strict NPI: *Alex didn't realize/report that it ⌜need⌝ʳ create serious difficulties.

Nonetheless, there is an obvious difference between NI and (ordinary) strict NPIs: We don't find NI when the NPI-licenser follows the inverted auxiliary, which is the prime licensing context for strict NPIs:

(10) a. NI: *After a party could I not/never sleep.   *vs.*   Never could I sleep after a party.
     b. Strict NPI: I don't/never ⌜give a damn⌝ˡ about sleep after a party.

I characterize the NPI-hood of NI/HC with the following condition: **The scope of the fronted constituent in NI/HC is a strict weak NPI** (NI/HC-NPI-Constraint), i.e., whatever is in the scope of the fronted constituent must be (at the same time) licensed like a strict weak NPI.
It has been observed in the literature that the fronted constituent in NI must have wide scope within its clause. For example, a fronted negative constituent cannot express constituent negation, but marks the entire clause as negated. This does not mean that the negation must have widest scope, as modals can take scope over it (Francis, 2017), see (11). The correct generalization seems to be that the fronted constituent takes scope over other quantifiers in the clause, and over the main lexical verb, but does not necessarily take widest scope.

(11) [Context: *You are teaching a class. The university is concerned that too many students have been failing in recent years, so they tell all instructors to limit the number of Fs they give out.*]
     To (very) few students must you give an F. (**MUST-deontic > FEW**) (Francis, 2017, 216)

This captures the data: **First**, if the fronted constituent is an NPI licenser itself, the NI/HC-NPI-Constraint holds trivially, as the fronted constituent is constructionally required to take scope over (major part) of the rest of the clause. **Second**, we exclude an NPI within the fronted constituent in umembedded "negative" inversion – whether or not the clause contains a negation, see (12): Since the fronted constituent in NI takes (relatively) wide scope, a fronted NPI cannot be in the scope of a licenser later in the clause.

(12) *Ever have I (not) been to Olomouc before.

Third, HCs may only have elements in the fronted position that do not intervene with the licensing. This excludes a universal quantifier or a positive polarity item, see (13).

(13) I don't think that [in a single year]/*[every year]/*[in some years] has Alex finished a paper.

Fourth, definites are excluded in the fronted position in HCs, see (14).

(14) I don't think that *[this year] has Alex finished a paper.

This is surprising because definites are not interveners for NPI licensing, contrary to universals:

(15)   Alex did not give the/*every apple to ⌜any⌝^{r} of the kids.

The ungrammaticality of fronted definites in HCs follows from the requirement that the fronted constituent must take scope over the rest of the clause. Definites are not scopal in the relevant sense – which is why they usually do not count as interveners in NPI licensing in the first place.

1.2   Non-local licensing of strict NPIs and NI/HC

In the relevant examples, the negation is interpreted in the matrix clause, not in the embedded clause. This is also the case in (8). Horn (2014) explains the occurrence of HCs in non-Neg-Raising contexts as follows: In examples like 3b, non-factive *know* has a relevant weaker alternative – for example *think* – for which a Neg Raising inference is true. I.e., the example is fine because *I don't think that ever before . . .* is.

I will propose a simpler theory, in which strict NPIs and HCs are directly licensed by a matrix negation in the complement of a Neg Raising or a non-factive predicate. This is particularly plausible as, semantically, these contexts pattern with other licensing cases.

Universally quantified noun phrases are interveners even for non-strict NPIs like ⌜*any*⌝^{r}, as in (15) above. However, modal and opaque predicates do not block NPI licensing, even when interpreted as universal quantification over possible worlds. In (16), the strict NPI ⌜*lift a finger*⌝^{l} is licensed by the negation even with an intermediate universal modal.

(16)   He won't have to ⌜lift a finger⌝^{l} but he'll gain all the reward.   ¬ > **MUST** > NPI

Just like modals, Neg Raising predicates and other matrix predicates are typically analyzed as quantifiers over possible worlds. It would then be expected that they do not constitute interveners for NPI licensing either. We can apply this basic insight to Neg Raising *think* and non-factive *know*. Both predicates can be analyzed as universal quantifiers over the worlds compatible with what the subject believes or is certain about. As shown in (17), the strict NPI ⌜*all that*⌝^{r} is in the scope of a negation with just the quantification over some relevant set of worlds, written as $\mathscr{W}$ in the example, taking scope between the negation and the content of the NPI.

(17)   I don't think/know [that this is ⌜all that⌝^{r} complicated]. $¬\forall w \in \mathscr{W}_{\textbf{speaker}}.(\ldots \text{NPI}\ldots))$

This analysis captures the licensing of all discussed NPI types under matrix negation. However, we now have shifted the analytic burden from explaining to why strict NPIs are licensed in Neg Raising to why they are not licensed under other types of matrix predicates.

Blocking case 1: Veridical inference blocks strict NPIs and HCs   If we allow a matrix negation to license embedded strict NPIs, we seem to have lost the control over the restricted distribution of these NPIs. Strict NPIs and HCs are not licensed if the veridicality of the complement clause is inferred or assumed. Kastner (2015) suggests that the complement of factive predicates is a definite noun phrase (and behaves semantically as one). This looks promising at first, as NPIs are not licensed inside a definite noun phrase. However, However, the analogy breaks down as non-strict NPIs like ⌜*ever*⌝^{r} are excluded from licensing inside a definite noun phrase, see (18a), but can occur in the complement of negated factive predicates, see (18b).

(18)   a.   They didn't write [a/*the book that could ⌜ever⌝^{r} be published]. (indef/def)
          b.   They didn't realize [that the book could ⌜ever⌝^{r} be published]. (factive)

Montero & Romero (2023) explore whether mood choice in the complement clause of negated matrix predicates in Spanish influences factivity. They derive veridical inferences as scalar implicatures triggered by exhaustification, following Romoli (2015): As a factive predicate, **know** has the scalar alternatives **know**(x,p) and p, with p being the weaker alternative. Under negation, $¬\textbf{know}(x,p)$ is exhaustified to $¬\textbf{know}(x,p) \wedge p$, i.e., when negating a strong element on the scale, the weaker scalar alternative is still assumed to be true. (Sedivy, 1990) makes the above-mentioned distinction between regular and lexical NPIs to capture the fact that some (the lexical) NPIs can be licensed by pragmatic enrichment, whereas others (the regular) NPIs cannot, see (6) above. Sailer (2021), uses the contrast in (6) to argue that regular NPIs need to be licensed in the non-enriched content, whereas lexical NPIs can also be licensed through well defined pragmatic inference processes, including scalar implicatures.

As noted above, the three licensing dimensions of NPIs can vary independently of each other. For strict NPIs we need to assume that pragmatic enrichment must not introduce a constellation that excludes the NPI – as would be the case for a strict NPI inside p in $\neg\mathbf{know}(x, p)$ after exhaustification to $\neg\mathbf{know}(x, p) \wedge p$. Applying this to HC, the ungrammaticality of (19) with a factive us of *know* follows. I sketch the semantic representation below the example. The parts of the semantic representation that are contributed by enrichment are underlined in black. Factive *know* triggers the conjunct *and ever before has K. won a medal*. In this conjunct, the scope of *ever before* is not in a licensing environment for a strict NPI, violating the NI/HC-NPI-Constraint.

(19) HC: *Alex didn't know [that ever before has Kim won a medal].

$\qquad\qquad \neg\mathbf{know}(\mathbf{alex}, (\ldots \text{NPI} \ldots)) \wedge (\ldots *\text{NPI} \ldots)$

Blocking case 2: Content clauses   It has long been observed that some predicates like *be the case*, *be true*, *be of the opion* do not allow for licensing of embedded strict NPIs – even thought they allow for a "Neg Raising inference." Such matrix predicates can license non-strict, but not strict NPIs, see (20) and (21).

(20) Non-strict NPI: I am not of the opinion [that it would $\ulcorner$ever$\urcorner^r$ be used …]   (English Trends)

(21)   a. Strict NPI: I am not of the opinion [that Carolyn will $\ulcorner$breathe a word$\urcorner^l$ about it.]
       b. HC: *I am not of the opinion [that ever before have the media played such a major role in a kidnapping.]   (Zeijlstra, 2017)

As mentioned in Hoeksema (2017), syntactic approaches to Neg Raising take these data as arguments for syntactic movement, as moving the negation from the *that* clause into the main clause would violate the Complex-NP-Constraint. I will rather propose an alternative approach. The *that* clause in these cases is a *content clause*, i.e., it expresses the content of the opinion. I will argue briefly that such a content clause is non-at-issue. To show this, I use a continuative *which* relative. Such clauses can take at-issue content as their antecedent, but not non-at-issue content. This is shown in (22): Only the matrix proposition can serve as the antecedent of *which*, not the content of the appositive relative clause, q.

(22) $[p$: Alex, $[q$: who moved to NY recently], wants to study linguistics], which$_{p,*q}$ surprises me.

In (23a), I add a continuative *which* clause to a construction with a Neg Raising predicate, (23a), and a construction with *be of the opinion that*. As indicated, in the fist case, the antecedent of *which* can either be the matrix proposition p or the embedded proposition q. In second, however, the *which* continuation can only express my surprise about Kim's holding a particular opion, not about the opinion itself.

(23)   a. $[p$: Kim doesn't think $[q$: that Alex is right]], which$_{p,q}$ surprises me.
       b. $[p$: Kim is not of the opinion $[q$: that Alex is right]], which$_{p,*q}$ surprises me.

This shows that the content clause must be non-at-issue in some sense. Clearly, it is not presupposed. However, we can say that it must be part of Portner's *common propositional space*, i.e., of propositions that are of interest for the current conversation.[1] I use the constant **CPS** for this set of propositions.
This results in the semantic representations in (24). The non-strict NPI in (24a) is licensed by the negation in the at-issue content. The non-at-issue content does not play a role for it. However, the strict NPI in (24b) does not tolerate a non-licensed occurrence in the non-at-issue content.

(24) Kim is not of the opinion …
       a. [that Alex will $\ulcorner$ever$\urcorner^r$ talk about it]. $\neg\forall w.w \in \mathscr{W}_{\mathbf{alex}}.(\ldots \text{NPI} \ldots)$ $\wedge \lambda w.(\ldots \text{NPI} \ldots) \in \mathbf{CPS}$
       b. *[that Alex will $\ulcorner$breathe a word$\urcorner^l$ about it]. $\neg\forall w.w \in \mathscr{W}_{\mathbf{alex}}.(\ldots \text{NPI} \ldots) \wedge \lambda w.(\ldots *\text{NPI} \ldots) \in \mathbf{CPS}$

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[1] See Montero et al. (2024) for making the point that propositions in the common propositional space can block the licensing of strict NPIs in Spanish embedded indicative clauses.

Blocking case 3: Speech reports block HCs and all NPIs HC and all NPIs are excluded in speech reports. Hoeksema (2017) argues that the reported utterance itself is not at issue, whereas an NPI must be part of the at-issue content in the constellation in which it is licensed. Montero & Romero (2023) treat speech report on a par with attitude predicates with the only difference being in the modal base (the *reported background* for verbs of saying, following Portner & Rubinstein 2020), but the content of the speech report is not an alternative. Thus, if we adopted Montero & Romero's analysis, we would be in the same situation as for non-factive non-speech-report predicates and wrongly predict NPI licensing and HCs inside speech reports. Therefore, I will go in a different direction. I propose that speech reports are semantically definites – in analogy to the analysis of factive predicates in Kastner (2015). However, semantic definiteness (i.e., existence and uniqueness) is on there being an utterance with a particular propositional content, not on the truth of the uttered proposition. I sketch the resulting semantic representation in (25), where I assume that the variable x is of the semantic type u (for "utterance", see Potts 2007a), and the predicate **Content** holds between an utterance x and a proposition p iff p is a propositional content entailed by x.

(25) *I didn't report [that $\ulcorner$<u>ever</u>$\urcorner^l$ would Alex submit a paper]. $\neg$**report**(**speaker**, $(\iota x_u : \textbf{Content}(x, p)))$

In this semantic representation the meaning of the embedded clause, p, only occurs inside the iota operator and is, therefore, not part of the scope of negation, nor of the at-issue content. This captures Hoeksema's idea of "non-at-issueness" of reported speech and the NPI-non-licensing into both speech reports and definitess.

Intermediate summary I have argued that in NI/HC, the fronted constituent has scope over a substantial part of the rest of the clause and that what is in its scope behaves like a strict weak NPI (the NI/HC-NPI-Constraint). In addition, I have amended the NPI licensing theory of Sailer (2021) by adding a licensing condition for strict NPIs, i.e. that every occurrence of a strict NPI in the non-at-issue content must be licensed. I propose that since quantification over possible worlds is not an intervener for NPI licensing, licensing from a matrix negation should be possible in general. However, the enrichment through a factive inference or contextual giveness blocks the licensing of strict NPIs. The semantics of speech reports introduces a definite utterance, which, as definites in general, blocks all NPIs. In the following, I will show that existing analyses in HPSG allow for a direct formalization of this approach.

2 Previous HPSG analyses

Negative inversion Maekawa (2012) adopts the classical analysis of NI as a flat construction from Emonds (1970) in which a clause-initial constituent is followed by an inverted auxiliary, its subject, and a VP. The fronted constituent can either be extracted from the VP or be an adverb modifying that VP.
Maekawa (2012) restricts the fronted constituent to be marked as negative, which means that it must contain some element that is able to express clausal negation, such as *never*, or *not a single person*. Since we also find inversion with other NPI licensers, see (7), negative inversion cannot be related to morpho-syntactic negativity of the fronted constituent but rather to some semantic properties. In HC, the fronted element is never an inherently negative expression.

Neg Raising Sailer (2006) analyzes Neg Raising as an instance of scope ambiguity, i.e., the negation from the matrix clause can either take scope over the matrix predicate or be in its scope. In this analysis, the surface syntax *NP doesn't V [S]* can be interpreted as $\neg[\![V]\!]([\![NP]\!], [\![S]\!])$, or as $[\![V]\!]([\![NP]\!], \neg[\![S]\!])$. Sailer (2006) expresses this scope ambiguity in the framework of *Lexical Resource Semantics* (LRS, Richter & Sailer 2004). LRS uses a standard higher-order semantic representation language, encoded within the feature-structure logic of HPSG. In LRS, a lexical head has a feature IN(TERNAL-)CONT(ENT) whose value is an expression that all of the head's dependents take scope over. Richter & Sailer (2004) attribute a special property to auxiliaries: just like their subject depends on that of their VP complement, they assume that an auxiliary's INCONT is identical with that of its VP complement. Sailer (2006) makes the same assumption for Neg Raising predicates. Contrary to Sailer (2006), I claim that the relevant semantic parallelism between Neg Raising predicates and auxiliaries just lies in both being analyzable as quantifiers over possible worlds.

Semantics-pragmatics interface The account of the NPI data motivated in Section 1 relies on both at-issue and non-at-issue semantics. Sailer & Am-David (2016) and Jin & Koenig (2021) show how these various types of semantics can be integrated within LRS. Sailer (2021) presents an HPSG-compatible model of the semantics-pragmatics interface, which is heavily based on Levinson (2000), but includes Conventional

Implicatures. In this model, there is a *primary truth-conditional content* that comprises ordinary, combinatorial semantics, including linking, and scope and anaphora resolution. The *conventional content*, then, includes conventional implicatures and other use-conditional content (Potts, 2007b). As proposed in Levinson (2000), the *utterance content* is arrived at by further enrichment through generalized conversational implicatures (including scalar implicatures). Particularized conversational implicatures à la Grice (1975) are not considered part of the linguistic representation in this model.

Sailer (2021) uses this model to capture the distributions of what I refer to as regular and lexical NPIs in the present paper. Sailer (2021) argues that regular NPIs such as ⌜*ever*⌝^{r} need to be licensed within the primary content. Lexical NPIs such as ⌜*lift a finger*⌝^{l} are fine if licensed in the utterance content. This captures the contrast in (6).
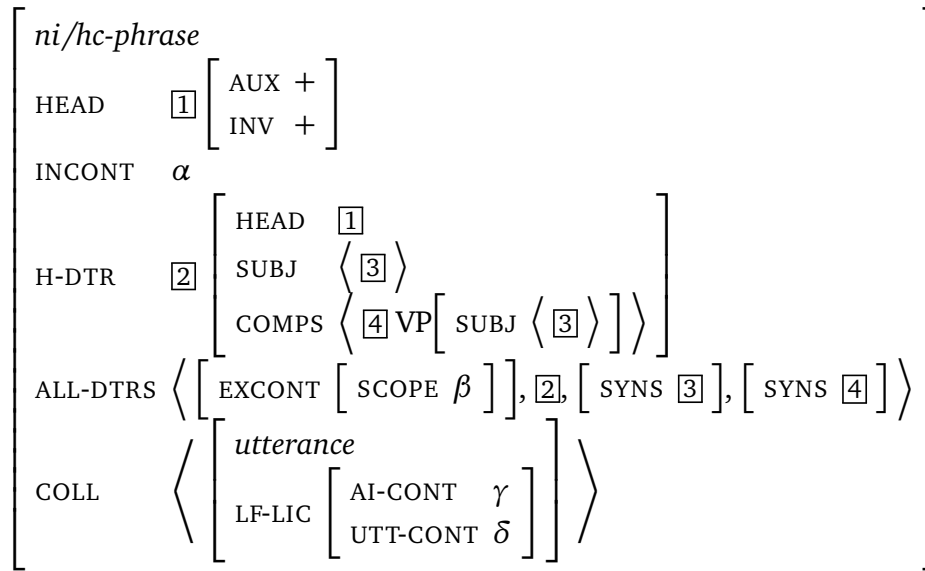
NPI licensing   We can combine this with the collocational treatment of NPIs in Richter & Soehn (2006). They argue that an NPI must be licensed within the semantic representation of a particular syntactic domain containing it. Both, the kind of licenser and the size of the domain can vary. Richter & Soehn use a list-valued feature CONTEXT-OF-LEXICAL-LICENSING (COLL) to express distributional idiosyncrasies of lexical items. The elements on the COLL list specify the syntactic domain of the licensing by their type – for example *utterance* for licensing within the complete utterance. In addition, they have values for whether this is a semantic, syntactic, or phonological licensing condition. NPIs require semantic licensing, which is expressed by a feature LF-LIC. The concrete licensing strength is encoded as functional constraints. For example, if α is the relevant part of the semantic representation that needs to be licensed by a strong (anti-additive) licenser within the EXCONT of the licensing domain, they specify the LF-LIC feature as $\left[\text{EXCONT } \texttt{aa-str-op}(\alpha) \right]$.

3   Analysis

In my analysis, I will combine existing HPSG analyses of negative inversion, semantic representations, and NPI licensing to encode a surface-scope analysis. The analysis is summarized in Figure 1. As for the syntactic structure, I adopt the flat structure from Maekawa (2012). It is an idiosyncratic phrase, headed by an inverted auxiliary. However, I do not require the fronted constituent to be marked as morpho-syntactically negative.

I implement Sailer's 2021 semantics-pragmatics interface in HPSG in the following way: The *primary content* (and possibly also the *conventional content*) can be treated as LRS's EXCONT. I introduce a feature UTT(ERRANCE)-CONT, which is only appropriate for unembedded signs. The UTT-CONT value contains the enrichment by generalized conversational implicatures – in analogy to how Höhle (2019) treats post-lexical phonology as an enrichment of "compositional" phonology.

In general, I adopt LRS because it has been used for related phenomena and provides the necessary tools to express my analysis. First, I require that the fronted constituent be scopal. In LRS, quantified NPs and adverbs are analyzed as having their quantifier as their EXCONT value. Quantified expressions have a feature SCOPE whose value is the formula over which they scope. The neg word *never* and the NPI *ever* have the same EXCONT value, but in the case of *never*, the word contributes an additional negation that takes scope over its EXCONT values (Richter & Sailer, 2006). Second, as is standard in LRS, the INCONT value of the auxiliary, α, is identical with that of the infinitival VP. Consequently, by requiring in Fig. 1 that the INCONT value of the phrase be in the scope of the fronted constituent, we allow for the auxiliary's semantics to either scope above or below the fronted element. This can capture the attested scope variation with modal auxiliaries, in (16).

I unpack the notation in Richter & Soehn (2006) to model strict NPIs. Richter & Soehn require an occurrence of the NPI's semantics in the scope of an appropriate licenser, i.e., there is an **existential quantification** over the occurrences of the NPI semantics. This suffices to capture **non-strict** NPIs. For **strict** NPIs, however, we need a **universal quantification** over the occurrences of the NPI semantics: every occurrence of the NPI semantics in the utterance content (beyond the primary content) must be in the scope of an appropriate licenser. This means that a weak regular strict NPI, like ⌜*need*⌝^{r} and NI/HC, requires a downward entailing licenser in the primary content by virtue of being a weak regular NPI (the second condition below the AVM), and, by virtue of being a strict NPI, that any additional occurrence in the utterance content must also be licensed (the third condition below the AVM). For the time being, I simply postulate that the universal non-at-issue licensing underlies the same strength requirements as the existential licensing.

A strong lexical strict NPI (⌜*give a damn*⌝^{l}) needs an anti-additive licenser in the utterance content and demands that all occurrences outside the primary content must be licensed.

$$
\begin{bmatrix}
\textit{ni/hc-phrase} \\
\text{HEAD} \quad \boxed{1} \begin{bmatrix} \text{AUX} \; + \\ \text{INV} \; + \end{bmatrix} \\
\text{INCONT} \quad \alpha \\
\text{H-DTR} \quad \boxed{2} \begin{bmatrix} \text{HEAD} \quad \boxed{1} \\ \text{SUBJ} \quad \langle \boxed{3} \rangle \\ \text{COMPS} \quad \langle \boxed{4}\,\text{VP}\big[\, \text{SUBJ} \, \langle \boxed{3} \rangle \,\big] \rangle \end{bmatrix} \\
\text{ALL-DTRS} \quad \left\langle \big[\, \text{EXCONT} \, [\, \text{SCOPE} \; \beta \,]\,\big], \boxed{2}, \big[\, \text{SYNS} \; \boxed{3}\,\big], \big[\, \text{SYNS} \; \boxed{4}\,\big] \right\rangle \\
\text{COLL} \quad \left\langle \begin{bmatrix} \textit{utterance} \\ \text{LF-LIC} \begin{bmatrix} \text{AI-CONT} \quad \gamma \\ \text{UTT-CONT} \quad \delta \end{bmatrix} \end{bmatrix} \right\rangle
\end{bmatrix}
$$

& α is a subexpression of β	**(scope condition)**
& for some occurrence of β in γ: `de-lic-op`(β,γ)	**(weak regular NPI condition)**
& for every occurrence of β in δ that is not in γ: `de-lic-op`(β,δ)	**(strict NPI condition)**

Figure 1: Negative Inversion/Horn Clause phrase, building on Maekawa (2012) and Richter & Soehn (2006)

4 Conclusion

The present paper makes four contributions: First, it argues for a surface-scope oriented approach to phenomena that have considered strong arguments against surface scope of negation: the licensing of embedded strict NPIs and Horn clauses. Second, it shows that such a surface-scope analysis can be directly expressed within existing HPSG analyses of negative inversion and NPI licensing. Third, I reduce the strict/non-strict distinction of NPIs to universal vs. existential quantification over the licensing requirement within a semantic representation. Fourth, the analysis provides an example of a constructional NPI. The existence of such NPIs should not be surprising, but no such example has been previously discussed in HPSG to my knowledge.

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