Inverse Linking without LF-Movement

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1. Inverse Linking Constructions (ILCs)

In this paper, I will cast a fresh look at the syntax and semantics of so-called 'Inverse Linking Constructions' (henceforth: ILCs).[*] ILCs were first extensively discussed in May (1977) and are illustrated in (1ab):

(1) a. [$_{DP}$ One apple in [$_{QP}$ every basket]] is rotten.
b. [$_{DP}$ Some man from [$_{QP}$ every city$_i$]] despises it$_i$.

ILCs are DPs which contain a quantified NP (QP) which is selected by a preposition. ILCs have three characteristic properties: (i.) they are ambiguous between a 'surface' scope reading and an 'inverse' scope reading, on which the embedded QP takes scope over the indefinite or numeral expression (3ab); (ii.) on the inverse reading, the DP-internal QP can bind a pronoun outside the ILC (4ab)[1]; ILCs are restricted to non-specific DPs (Fiengo & Higginbotham 1981). The inverse reading is impossible with specific DPs, as shown in (5).

(3) One apple in every basket is rotten.
a. There is one apple which is in every basket and which is rotten.
b. In every basket, there is one apple which is rotten.
(4) Some man from every city$_i$ despises it$_i$.
a. For every city y, some man from y despises y.
b. *There is a specific man from every city who despises it.
(5) This picture of everybody is now on sale.
*For everybody y, this picture of y is on sale.

The properties of ILCs have often been put down to the application of a covert movement operation at the syntactic level of 'Logical Form' (LF) (May 1977, 1985, Fiengo & Higginbotham 1981, Heim & Kratzer 1998, Fox 2000). This LF-movement raises the embedded QP to a position from where it can take scope over the numeral/indefinite expression, and from where it can bind a variable outside the ILC.

In this paper, I argue that ILCs need not, and in fact should not be analysed in terms of LF-movement. The LF-movement analysis is replaced with a 'surface analysis', which treats ILCs as structurally ambiguous at surface structure in the spirit of Huang (1982), and which furthermore is empirically more adequate than the LF-analysis. The decrease in syntactic complexity is bought at the expense of additional complexity in the semantic component..

The structure of the paper is as follows. In 2, I present the LF-movement analysis as found e.g. in May (1977, 1985) and Heim & Kratzer (1998). In 3, I raise three kinds of problems for this analysis. In 4, I present the surface analysis of ILCs, which is shown to account for the properties of ILCs. In 5, I touch on some problems and extensions of the analysis, before concluding in 6.

2. The LF-Movement Analysis

May (1977, 1985) and Heim & Kratzer (1998) assume the surface structures in (6) for the ILCs in (1):[2]

(6) a. $[_{DP}$ One $[_{NP}$ apple $[_{PP}$ in $[_{QP}$ every basket]]]] is rotten.
#'There is one apple which is in every basket and which is rotten.'
b. $[_{DP}$ Some $[_{NP}$ man $[_{PP}$ from $[_{QP}$ **every city**$]_{\mathbf{i}}$]]] despises **it**$_{\mathbf{i}}$.
#'There is some man who is from every city and who despises it.'

LF-movement for interpretive reasons (e.g. scope) is optional (Fox 2000) and need not apply. In this case, the QP remains in situ. It takes surface scope under the numeral/indefinite expression (cf. 6ab), and is unable to bind a variable outside the ILC (6b). If LF-movement applies, the QP raises across the indefinite/numeral expression. In May (1977), the QP is extracted from the embedding DP. In May (1985) and Larson (1985), it only adjoins to the embedding DP. The latter option is illustrated in (7ab). (7ab) show that the raised QP takes scope over the indefinite/numeral expression at LF, and it is able to bind a variable outside the ILC, arguably under c-command.[3]

(7) a. $[_{DP}$ $[_{QP}$ every basket$]_1$ $[_{DP}$ one apple $[_{PP}$ in $t_1]]]$ is rotten.
b. $[_{DP}$ $[_{QP}$ every city$]_1$ $[_{DP}$ some man $[_{PP}$ from t_1]]] despises it_1.

3. Problems for the LF-Movement Analysis

There are three kinds of problems for the LF-movement analysis of ILCs. The first problem arises in connection with contradictory evidence regarding the landing site of the raised QP. An analysis without LF-movement would avoid such a contradiction. Secondly, crosslinguistic considerations argue against an

LF-analysis of ILCs. An analysis without LF-movement would make possible a unified treatment of English and German ILCs. Third, there is evidence that the surface structure of ILCs on their inverse reading is not as indicated in (6ab). If the QP takes scope over the numeral/indefinite expression at surface structure already, LF-movement (for scope reasons) becomes obsolete.

3.1. Contradictory evidence concerning the landing site of LF-movement

May (1985) and Larson (1985) present empirical arguments to the effect that the QP is not extracted out of the embedding DP in ILCs. Larson shows that certain inverse readings that would result from extracting the QP out of the DP are not attested. I illustrate his argument with the somewhat simpler example in (8).

(8) One apple on every plate is too much.

(8) means that is too much that every plate is such that there is one apple on it, where the universal quantifier takes scope over the numeral. The universal QP does not extract out of the DP in (8), however, for such movement would result in the LF-structure in (9a), with the unattested reading in (9b).

(9) a. $[\text{every plate}]_1\ [_{IP}\ [_{DP}\ \text{an apple on } t_1]\ \text{is too much.}]$
b. *'Every plate x is such that an apple on x is too much.'

That is, there should be no apple on any plate. The existence of sentences like (8), and a general ban on extraction out of subject DPs (cf. May 1985), form empirical evidence in favour of an analysis which does not extract the QP out of the embedding DP (cf. 7ab above).

On the other hand, Fiengo & Higginbotham (1981) assume extraction of the QP out of the embedding DP. For them, the non-specificity of ILCs (cf. 5) follows from a general ban on extraction from specific DPs, illustrated in (10).

(10) *Whom did he read this book of?

Hence, assuming LF-movement for ILCs leads to contradictory assumptions about the landing site of this movement. Extraction of QP out of the embedding DP accounts for one set of data (the specificity effects). Adjunction of QP to DP accounts for another set (the unattested readings). In light of this contradiction, it appears more promising to do without LF-movement altogether.

3.2. Cross-linguistic considerations

The second problem arises from cross-linguistic considerations. (11ab) show that German has ILCs which are syntactically and semantically parallel to their

English counterparts. The only plausible reading for (11ab) is the inverse scope reading. However, German shows at best weak evidence for scope driven LF-movement elsewhere in the grammar. On a neutral intonation, (12) seems to lack an inverse scope reading (Sæbø 1995, Krifka 1998).

(11) a. [Ein Apfel in jedem Korb] ist verrottet.
one apple in every basket is rotten (=1a)
b. [Ein Mann aus jeder $Stadt_i$] verachtet sie_i.
One/some man from every city despises it (=1b)

(12) Ein Arzt behandelte jeden Patienten.
A/somedoctor treated every patient
*'For every patient, there was a (different) doctor who treated him.'

The absence of an inverse scope reading for (12) can be taken as an argument against scope-driven LF-movement in German. The question arises, then, why scope-driven LF-movement in German should apply in the case of ILCs (11ab), but not in other syntactic configurations (12).

Conluding, the structural and interpretive parallelity of English and German ILCs calls for a unified analysis. A surface analysis could account for ILCs in both languages as well as for the absence of an inverse reading for (12).

3.3. Evidence for a different surface structure with inverse readings

The third problem concerns the surface structure of ILCs on the inverse reading as given in (6ab). The problem comes in form of an unexpected asymmetry which shows up in the presence of other postnominal modifiers, e.g. relative clauses or other PPs. It shows that inverse readings are possible if and only if the PP containing the QP (henceforth 'QPP') occurs in DP-final position (i.e. following all other postnominal material). In contrast, all non-final QPPs must be interpreted as PP-modifiers and give rise to surface readings only.

Regarding the relative order of QPPs and relative clauses (RCs), the inverse reading with ILCs is possible if and only if the QPP occurs in DP-final position (13a). If the QPP precedes the RC, the inverse reading is unavailable (13b).

(13) a. One person [$_{RC}$ who was famous] [$_{QPP}$ from every city] died last year.
'Every city y is such that one famous person from y died last year.'
b. #One person [$_{QPP}$ from every city] [$_{RC}$ who was famous] died last year.
#'One person who came from every city and who was famous died.'

The non-existence of an inverse reading for (13b) is unexpected on the LF-analysis, which takes all postnominal PPs to be modifiers right-adjoined to N'. LF-movement of the QPP should be equally good in (13ab), contrary to fact.

Regarding the relative order of QPPs and other PP-modifiers, the same holds. Ordinary PP-modifiers can occur in any order (14ab), while inverse readings with ILCs (with the prepositions *in*, *on*, *from*) are contingent on the DP-final occurrence of the QPP (15ab).[4]

(14) a. one slave [$_{PP}$ with good manners] [$_{PP}$ from Syria] was freed.
b. one slave [$_{PP}$ from Syria] [$_{PP}$ with good manners] was freed.
(15) a. one slave [$_{PP}$ with good manners] [$_{QPP}$ from every province] was freed.
b.#one slave [$_{QPP}$ from every province][$_{PP}$ with good manners] was freed.

If QPPs on the inverse reading were ordinary PP-modifiers (right-adjoined to N'), the difference between (15a) and (15b) would be unexplained. LF-movement should apply equally well to both QPPs, contrary to fact.

In this section, it has been shown that QPPs which give rise to inverse readings differ syntactically from other postnominal modifiers. They cannot freely change places with other modifiers, but must be DP-final. This suggests that the surface structure of ILCs - on the inverse reading at least - is not that in (6ab). With a different surface structure for ILCs, however, we need not fall back on LF-movement in order to account for the wide scope of the embedded QP. The correct scopal relationship may hold at surface structure already. In the following, I argue that ILCs do not have 'inverse' readings in the literal sense.

4. A Surface Analysis for ILCs

In this section, I propose a surface analysis for ILCs. In the spirit of Huang (1982), I assume that ILCs are structurally ambiguous at surface structure. The two readings of ILCs derive from two different surface structures which are string-identical. The proposed analysis can account for all properties of ILCs, in particular the DP-final occurrence of QPPs on the "inverse" reading.

Although I consider both readings of ILCs as surface readings, I will continue using the terms "surface" and "inverse" reading as convenient labels for the relevant readings. In 4.1, I briefly look at the "surface" reading of ILCs. In 4.2, I present the syntactic analysis of ILCs on the "inverse" reading. In 4.3, I present the semantic analysis of the "inverse" reading of ILCs. In 4.4, it is shown that the analysis proposed can account for the properties of ILCs.

4.1. The "surface" reading of ILCs

The surface reading of ILCs is illustrated again in (16).

(16) [A trip to every European capital] was fantastic.
'There was a trip directed to every EC which was fantastic.'

I adopt the standard analysis of "surface" readings, which is found e.g. in May (1985) and Heim & Kratzer (1998), and which was illustrated in (6ab) above. The PP *to every European capital* is analysed as a PP-modifier in sister position to the head noun. The indefinite article *a* is located in D^0.

(17) $[_{DP}$ A $[_{NP}$ trip $[_{PP}$ to $[_{QP}$ every European capital]]]] was fantastic.

Semantically, the "surface" reading of ILCs is derivable by means of a type-driven compositional semantics as found in Heim & Kratzer (1998). The QP undergoes type-raising, allowing for combining the values of QP and P in situ. The PP as a whole is a modifier to the head noun. Predicate modification combines the meaning of the PP with that of the head noun. Finally, the result serves as argument to an existential quantifier (possibly denoted by *a*).

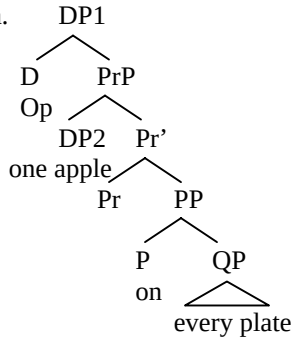
4.2. The "inverse" reading of ILCs I: The syntax

As argued above, the syntactic structure of ILCs with "inverse" readings (cf. 18ab) is more complex than the structure in (17).

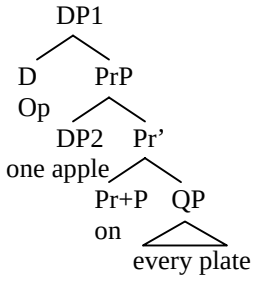
(18) a. One apple on every plate is too much.
b. One apple in every basket is rotten.

In particular, the base-structure of the DPs in (18ab) is as in (19a).The surface structure is as in (19b):

(19) a.



b.



The syntactic structures in (19ab) exhibit the following properties. To begin with, the PP *on every plate* is not adjoined to N' (as modifiers are), but it is base-generated as the syntactic predicate of a small clause structure PrP. This PrP is selected by a phonetically empty operator in D. The DP2 *one apple* is the subject of PrP. Semantically, the predicate PP predicates a place of this subject.

The existence of DP-internal predication is independently motivated. Predicative small clauses which are inside DP and selected by a functional head have been postulated by Abney (1987) for gerundive constructions (*John singing the Marseillaise*), by Kayne (1994) for DPs containing relative clauses, and by den Dikken (1998) for the N-of-a-N construction (*an idiot of a doctor*).

Finally, the P-head of the PP incorporates into the head of the small clause Pr, forming a complex predicate (Baker 1988). A similar process is found with applicatives and dative shift (Baker 1988), P-to-V incorporation in particle verb constructions, as well as incorporation of a dative P into copular *be* in possessive *have* constructions (den Dikken 1992).[5]

4.3 The "inverse" reading of ILCs II: The semantics

The semantic analysis of the "inverse" reading of ILCs is based on two assumptions: (i.) DPs in non-argument position can denote predicates, as in *John is a plumber*; (ii.) Skolem functions from individuals to individuals (type <e,e>) play a crucial role in the analysis (henceforth: 'function analysis').

The function analysis of "inverse" readings is illustrated first for (18a), which forms the simplest case. (18a) involves a mapping from plates into apples on these plates. It is too much if every plate is mapped to one apple on it. Instead, only some plates must be mapped to one apple on them. On this view, (18a) is a statement about functions mapping plates to apples. It specifies that certain mappings are not OK.

I would like to argue that it is the complex head [Pr+P] in (19b) which introduces functions into the semantic representation of (18a). The denotation of [Pr+P] takes the denotations of the small clause's predicate and subject (QP and DP) as its semantic arguments and maps them onto a set F of functions $f_1..f_n$. The values of QP and DP2 define the function, i.e. their values determine which functions $f_1…f_n$ can be elements of F. The QP-denotation determines the input of $f_1…f_n$, while the DP2-denotation determines the output of $f_1…f_n$ (together with the denotation of P). The denotation of Pr+P is given in (20a). Stepwise functional application (henceforth 'FA') of (20a) to the denotations of QP and DP2 yields (20b) and (20c). (20c) is the denotation of the small clause PrP.

(20) a. $[[\text{Pr+on}]] = \lambda Q_{<et,t>}\lambda P_{<et>}.\lambda f.\ Q(\lambda x.P(f(x)) \wedge \text{on'}(f(x),x))$

b. $[[\text{Pr+on every plate}]] = \lambda P_{<et>}.\lambda f.\forall z[\text{plate'}(z) \rightarrow (P(f(z)) \wedge \text{on'}(f(z),z))]$

c. $[[\text{one apple Pr+on every plate}]] =$
$\lambda f_{<e,e>}.\ \forall z\ [\text{plate'}(z) \rightarrow (\text{one\_apple'}(f(z)) \wedge \text{on'}(f(z),z))]$

The PrP *one apple on every plate* in (20c) denotes a set of Skolem functions $\{f_1, f_2, f_3, f_4,…\}$ of type <e,e> which map plates into apples on them. In a last step, the empty operator in D (21a) existentially quantifies over this set of functions. The DP denotes a proposition (21b) with the truth conditions in (21c).

(21) a. $[[Op]] = \lambda F_{<<e,e>,t>}. \exists f\ F(f)$
b. $[[DP]] = \exists \mathbf{f}\ [\forall z\ [plate'(z) \rightarrow one\_apple'(\mathbf{f}(z)) \wedge on'(\mathbf{f}(z), z)]] = 1$ iff
c. there is a function which maps every plate to one apple on it.

The proposition denoted by DP is an appropriate argument for the (syntactic) predicate *too much*, which (like *necessary*, *enough*) is an operator of type <t,t> over propositions. The entire clause *One apple on every plate is too much* is true iff it is too much that there is a function from every plate to an apple on it, which is true iff every plate has one apple on it. The introduction of functions from individuals to individuals therefore correctly derives the meaning of (18a).

The function analysis can be extended to derive the "inverse" reading for the ILC in (18b), the structure of which is repeated in (22).

(22) $[_{DP}\ Op_2\ [_{PrP}\ [_{DP}$ one apple] [[Pr+in] $[_{QP}$ every basket]]]] is rotten.

The semantic derivation of (22) is as above up to the level of PrP. PrP denotes a set of functions from all the baskets to individual apples contained in them.

(23) $[[PrP]] = \lambda f_{<e,e>}. \forall z\ [basket'(z) \rightarrow one\_apple'(f(z)) \wedge in'(f(z), z)]$

The difference lies in the semantic value of the silent operator Op_2 in D. Op_2 existentially quantifies over a set of functions F, too, but in addition it attributes a property P (anticipating the VP-denotation) to the values of f (here: individual apples) (cf. 24a). The value for the entire DP is given in (24b).

(24) a. $[[Op_2]] = \lambda F_{<<e,e>,t>}.\lambda P_{<e,t>}. \exists f\ [F(f) \wedge \forall x[dom(f)(x) \rightarrow P(f(x))]]$[6]
b. $[[DP]] = [[Op_2]]([[PrP]]) = \lambda P_{<e,t>}. \exists f\ [\forall z\ [basket'(z) \rightarrow$
$one\_apple'(f(z)) \wedge in'(f(z), z)] \wedge \forall x[dom(f)(x) \rightarrow P(f(x))]]$

Finally, the denotation of DP functionally applies to the VP-denotation:

(25) a. $[[$One apple in every basket is rotten$]] = \exists f\ [\forall z\ [basket'(z) \rightarrow$
$one\_apple'(f(z)) \wedge in'(f(z),z)] \wedge \forall x[dom(f)(x) \rightarrow rotten'(f(x))]] = 1$ iff
b. there is a function f from baskets to apples in them and the values of f for all baskets are rotten,

which is true iff in every basket there is one rotten apple.

Summing up, it was shown that the function analysis correctly derives the "inverse" readings of ILCs, taking as input the DP-internal small clause structure in (19b). The analysis proposed puts more burden on the semantic component, while making the syntax less complex in that there is no need for LF-movement. All readings of ILCs are derivable from surface structure.

4.4. Accounting for the properties of ILCs and further predictions

The surface analysis captures the following properties of ILCs.

First, the right-peripheral position of QPPs with inverse readings follows from their status as syntactic predicates of a small clause PrP. As such, they must follow all postnominal modifiers of the noun phrase in SpecPrP.

Second, "inverse" readings are possible only with proper QPs inside the QPP because [Pr+P] requires an element of type <et,t> as its first argument.

(26) a. Two students in every class / most classes got an 'A'.
'For every class / most classes x, two students in x got an 'A'.'
b. #Two students in some / many / five classes got an 'A'.
*'In some/ many/ five classes x, two students in x got an 'A'.'

Third, the semantics of Pr require the DP in SpecPrP to be predicate-denoting, hence non-specific. This restriction to predicate-denoting DPs accounts for the non-specificity of ILCs (cf.5). It also correctly predicts that ILCs with non-specific, i.e. type-denoting definite DPs, such as (27), are possible as well (cf. Fiengo & Higginbotham 1981).

(27) [The mother of every drowned soldier] wept bitterly.

An assumption implicit in the analysis of ILCs was that numerals and indefinites in SpecPrP denote predicates over pluralities, which can be constructed as second order predicates over sets (type <et,t>). Since proper QPs are of the same type (Winter 1999), they are correctly predicted to occur in SpecPrP.[7]

(28) Every student / exactly one student in every class passed.

In contrast, specific (referring) definite DPs do not allow for "inverse" readings because their determiners are located in the highest D-head and incompatible with the semantics of PrP. This was shown in (5).

Fourth, because the semantic analysis of "inverse" readings is more complex than that of "surface" readings, we expect "inverse" readings to be a marked option (a last resort). It follows that "inverse" readings are easily available only with those prepositions (*for*, *on*, *from*) that do not allow for a sensible "surface" reading (29). With prepositions that allow for a sensible "surface" reading (e.g. with *to* or *about*), "inverse" readings are hard, if not impossible, to get (cf. 30).

(29) Some man from / in every city fell ill.
(30) A trip to every city was fantastic.
a. 'There is one trip directed to every city which was fantastic.'
b. ??'For every city x, there is a trip to x which was fantastic.'

Fifth, the function analysis of "inverse" readings extends to bound variable readings as illustrated in (1b), repeated as (31).

(31) $[_{DP}\ Op_3\ [_{PrP}[_{NP}$ Some man$]\ [[_{Pr}$ Pr+from$]\ [_{QP}$ every city$_i$$]]]]\ [_{VP}$ loves it$_i$$]$.

The third instantiation of the function analysis differs from the second in that D is occupied by an operator Op_3, which existentially quantifies over a set of functions F, at the same time attributing a relation R (the VP-denotation) to all members of f's domain and to their values (cf. 32). The relation R is obtained by λ-abstraction over the pronoun's index at the VP-level (Bittner 1994).

(32) $[[Op_3]] = \lambda F_{<<e,e>,t>}\lambda R_{<e,<e,t>>}.\ \exists f\ [F(f) \wedge \forall x[dom(f)(x) \rightarrow R(x)(f(x))]]$

(33) a. [[Some man from every city$_i$ loves it$_i$.]] = $\exists f\ [\forall z\ [$ city'$(z) \rightarrow$ man'$(f(z)) \wedge$ from'$(f(z),z)] \wedge \forall x[dom(f)(x) \rightarrow$[love'$(f(x),x)]] = 1$ iff

b there is a function f from cities to men from these cities and for every city it holds that its function value (i.e. a man) loves that city,

which is true iff for every city z, there is at least one man from z who loves z. The function analysis of bound variable readings also explains the contingency of variable binding on the "inverse" reading (cf. 4ab). The function introducing head [Pr+P] is simply not base generated on the surface reading.

Summing up, this section has shown that the surface analysis of ILCs can account for their characteristic properties. It has also been shown that the semantic analysis of the "inverse" reading can be extended to bound variable readings as well. The additional computational complexity is reflected by the marginality of bound variable readings (cf. footnote 1).

5. Open Questions and Possible Extensions

A number of questions arise. One is if there is independent evidence for the existence of the operators Op_2 and Op_3 which, unlike overt determiners in D, are non-conservative. If not, could the same semantic result be obtained without these operators, e.g. by a construction specific mechanism? A second question is what triggers λ-abstraction over the pronoun's index in the VP in (31)? Somehow, the index of the QP must percolate up to DP, triggering λ-abstraction on DP's sister, the VP.

Setting these questions aside, the surface analysis may be applicable to other configurations which exhibit "inverse" readings, and have been argued to involve a predicative small clause structure. Candidates are the presentational sentence in (34a), and the French double object construction in (34b).

(34) a. A guard was standing in front of every building.

b. Le professeur a donné le même livre à Zoe, à Sophie, et à Claire.
The professor has given the same book to Z., to S., and to C..

Hoekstra & Mulder (1990) suggest a small clause analysis for presentational sentences. In our terms, their structure for (34a) would spell out as (35a). Bowers (1993) suggests the small clause analysis in (35b) for double object constructions. Interestingly, Vergnaud & Zubizarreta (1992) also derive the distributive effect from the presence of predication.

(35) a. [A guard]$_1$ was [$_{PrP}$ t$_1$ [$_{Pr}$ standing] [$_{PP}$ in front of every building]].
b. Le professeur a donné [$_{PrP}$ [$_{DP}$ le meme livre] Pr [$_{PP}$ à Z., à S., et à C.]].

The structural resemblance between (37ab), and the small-clause structure for ILCs proposed in this paper makes it tempting to look for a unified analysis for all these phenomena. I leave this matter open for further research.

6. Conclusion

In this paper, I have presented a surface analysis of inverse linking constructions (ILCs). The two readings of ILCs have been shown to derive from two different surface structures. The surface analysis is semantically more complex, but it is empirically more adequate in that it acounts for the contingency of the "inverse" reading on a DP-peripheral position of the PP. The analysis also explains why a language without scope-driven LF (German) allows for "inverse" readings with a subset of syntactic configurations which all involve small clause predication.

Notes

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1 The bound-variable reading is not available for all speakers. See the end of 4.4 for discussion.

2 '#' is used to indicate grammatical, but pragmatically strange readings.

3 At least under Kayne's (1994) definition of c-command, according to which elements left-adjoined to maximal projections always c-command out of these because they are not dominated by them.

4 I leave open if an inverse reading for (16b) is possible with an intonational break between QPP and PP. If so, the DP-final PP may be right-dislocated.

5 Incorporation of the head of a small clause predicate into the head of the small clause is also found in den Dikken & Naess (1992). The incorporation in (19b) violates the Projection Principle and is not in line with Baker's requirement that incorporation must preserve the categorial structure (but see Marantz 1984). However, there is no principled reason that would block the prepositional head P

in (19b) from leaving behind a trace, preserving categorial structure. The trace could either be semantically empty, or it could denote the identity function.

[6] The value for *dom(f)* is related to the value of the embedded QP by *dom(f)* $\in$ *[[QP]]*. This ensures that the restriction of the universal quantifier is large enough. At the same time, presence of *dom(f)* allows for the case that f ranges only over subsets of the restriction of QP. This is necessary in the case of ILCs with *mostQPs* such as *One student in most classes failed*. In this case, all elements of a set containing more than half , but not necessarily all of the classes map into a student who failed.

[7] The change to second order predicates over sets is accompanied by a slight revision in the semantics of ILCs: The function f must map into sets of individuals (not singular individuals), and the complex head [Pr+P] requires its second argument to be of type <et,t>.

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