A dynamic binding approach to intervention effects on negative polarity item licensing

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0. Introduction

Over the past twenty years, a considerable amount of attention has been given to the best way of characterizing the class of licensing *triggers* for Negative Polarity Items (NPIs) in syntactic and semantic terms.[1] Without any doubt, these efforts have generated many important insights with respect to the nature of syntactic and semantic representations, and the sophisticated interactions between them. In this paper, I would like to contribute my modest part by considering the question why it is that the licensing relationship between a 'negative' trigger and an NPI is also conditioned by properties of the intervening material, as illustrated by the contrast between (1) and (2).

(1)   *Noone* gave the beggar *a red cent*
(2)   **Noone* gave at most three beggars *a red cent*

In my attempt to answer the above question, I will essentially ignore issues that relate to the characterization of the class of potential triggers for NPIs. Specifically, then, I will argue that the intervention effects on NPI licensing can be simply accounted for in the framework of Dynamic Semantics (as presented in Chierchia 1995) by exploiting the following two theses. The first concerns an assumption which is at the heart of Dynamic Semantics, whereas the second concerns an empirical generalization:

☐ For a quantificational expression – say, a 'negative' trigger – to bind an indefinite DP – say, a (*strong*) NPI – as its restriction, the (restricted) existential quantifier denoted by the indefinite DP needs to be 'disclosed'. The operation that accomplishes this, Existential Disclosure, requires the indefinite DP to bind a (covert) pronoun which occurs outside of its syntactic scope.

☐ The expressions that induce intervention effects on NPI licensing all create so-called *inaccessible* domains for binding, i.e. an indefinite DP that occurs inside the syntactic scope of these expressions cannot bind a pronoun that occurs outside of their syntactic scope.

Thus, the principles of Dynamic Semantics that take care of Inaccessibility will then automatically yield the intervention effects on NPI licensing as a simple corrolary. Since these dynamic principles are not in any way specifically designed to deal with the sensitivity of NPIs to intervention effects, we expect similar effects to show up in other contexts in which a quantificational expression needs to bind an indefinite DP as its restriction.

The paper is organized as follows. In the next section, the core set of data will be presented that this paper seeks to account for, focusing for convenience on the behaviour of strong NPIs such as *a a red cent* in (1) and (2). Section 2 will lay out some basic assumptions with respect to NPIs that will serve as a background for our analysis. Our dynamic binding approach to the intervention effects on NPI licensing will then be fully developed in section 3 along the lines sketched earlier. Finally, we will discuss in section 4 the behaviour of weak NPIs, such as *any* in English. Also the status of NPI constructions with respect to other constructions in which a quantificational expression needs to bind an indefinite DP as its restriction will be briefly discussed in that section. The fact that all these constructions display the same intervention effects will then serve as a basis for comparison between our analysis and the various alternative approaches to intervention effects on NPIs that have been proposed in the literature.

1. Intervention effects on NPI licensing

Interestingly, the question whether an occurrence of an NPI is licit in a given context does not only depend on whether the NPI finds itself in the scope of a suitable 'negative' trigger. It also depends on specific properties of the material that intervenes between the 'negative' trigger and the NPI at the relevant level of representation (say, the level of LF in current syntactic theory). Descriptively, referential expressions (i.e. definite descriptions, proper names etc.), singular indefinites and collectively construed, bare numeral indefinites may happily intervene between trigger and NPI, as (3) shows.[2]

(3) a *Niemand* gaf de (drie) zwerver(s) *ook maar een stuiver*
        "Noone gave the (three) beggar(s) a red cent"
     b *Niemand* gaf een zwerver ('a beggar') *ook maar een stuiver*
     c ?*Niemand* gaf drie zwervers ('three beggars') *ook maar een stuiver*

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[2] Here, as well as throughout this paper, I will mainly refer to Dutch because of my own familiarity with the language. I will assume that the same judgements carry over to the English equivalents, as has been argued for by Linebarger (1987) and Jackson (1994) who, however, do not consider the full range of expressions examined here.

On the other hand, 'real' quantified expressions (henceforth Q-NPs) disrupt NPI licensing, as witnessed by (4).

(4) a *Niemand gaf hoogstens ('at most') drie zwervers ook maar een stuiver
     b *Niemand gaf minstens ('at least') drie zwervers ook maar een stuiver
     c *Niemand gaf elke ('every') zwerver ook maar een stuiver

Furthermore, it is a well-known fact that the occurrence of a strong NPI such as ook maar een stuiver in an interrogative sentence yields a rhetorical interpretation for that question, as illustrated in (5). Thus, in order to find out whether 'negative' quantifiers also induce intervention effects on NPI licensing, we need only observe that the rhetorical interpretation is missing in (6). For reasons that will be uncovered in section 3, for this sentence to be well-formed, the 'negative' quantifier niemand must license the NPI ook maar een stuiver itself, leading to an ordinary yes/no-question interpretation for the interrogative.[3]

(5)   Gaf Jan ook maar een stuiver aan die zwerver?   (✓rh Q, *y/n Q)
        rh Q: Jan didn't give a red cent to that beggar
        y/n Q: *Is it true that Jan gave a red cent to that beggar?
(6)   Gaf niemand ook maar een stuiver aan die zwerver?   (*rh Q, ✓y/n Q)
        "Did noone give a red cent to that beggar?"

In the remainder of this paper, we will try to account for the fact that Q-NPs may not intervene in NPI licensing, in contradistinction to referential DPs, singular indefinites and collectively construed, bare numeral indefinites. But first we must spell out our basic set of assumptions with respect to NPIs proper in terms of which our analysis of the intervention effects on NPI licensing will be couched.

2. Some background assumptions

Both within and across languages, there is a very strong tendency for NPIs to denote minimal amounts of some sort. For instance, a red cent denotes a minimal amount of money, a drop of wine denotes a minimal amount of wine, and lift a finger denotes a minimal amount of activity. In view of this, one would like any adequate treatment of the semantics of NPIs to reflect this strong universal tendency. Let us therefore adopt the proposal put forth in Krifka (1991), according to which every NPI is semantically associated with a lattice sort L_{NPI} with respect to which the NPI denotes the smallest element. For present purposes, it

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[3] Khalaily (1995) independently makes similar observations concerning the blocking effects on NPIs in interrogative contexts.

suffices to view lattices simply as partially ordered sets that are closed under all Boolean operations. On the basis of this assumption, we can then attribute the following lattice sort to the NPI *a red cent*.

(7) $L_{\text{a-red-cent}'}$ = <**a-red-cent**$'$, $L_{\text{red-cent}'}$, $\leq_{\text{red-cent}'}$>, where

    a $L_{\text{red-cent}'}$ is the set of all amounts of money;

    b $\leq_{\text{red-cent}'}$ is a partial order (say, smaller than or equal to);

    c   **a-red-cent**$'$ $\in$ $L_{\text{red-cent}'}$, and $L_{\text{red-cent}'}$ contains at least one more element; and

    d   **a-red-cent**$'$ is the unique Y such that for every X $\in$ $L_{\text{red-cent}'}$, Y $\leq_{\text{red-cent}'}$X

Furthermore, we will assume that the licensing of strong NPIs requires that the polarity item is semantically interpreted as a restricted variable, 'unselectively' bound by its trigger. Now, semantically, this move is fairly innocuous when faced with elementary cases such as (8a). It is not hard to see that the logico-semantic formula in (8b), which would correspond to simply assigning the indefinite NPI *a red cent* existential force, is truth-conditionally indistinguishable from the logico-semantic formula in (8c), which is as the assumption we are presently considering would have it.

(8)   a   *Noone* gave the beggar *a red cent*   (cf. 1)

    b   NOx: person$'$(x) $\wedge$ $\exists$y [red-cent$'$(y) $\wedge$ gave$'$(x, ιz [beggar$'$(z)], y)]

    c   NOx,y: person$'$(x) $\wedge$ red-cent$'$(y) $\wedge$ gave$'$(x, ιz [beggar$'$(z)], y)

Interestingly, however, there are contexts where adopting either one of the two strategies exemplified above would have a serious impact on the proposed truth conditions, most notably donkey-sentences. For these cases, it turns out that treating the strong NPI as a restricted variable 'unselectively' bound by its trigger is in fact empirically superior to treating it as an ordinary (restricted) existential quantifier. For reasons of space, we cannot go into these matters here, unfortunately (but cf. Honcoop 1995 for some discussion).

As a final assumption with respect to NPIs, we will simply adopt without any discussion the proposal defended in Jackson (1994) according to which every NPI is an indefinite expression. We will take this proposal to mean that, on a par with all other (singular) indefinites, every NPI is semantically interpreted as a (restricted) existential quantifier. Now, it would seem that this third assumption is completely at variance with the second assumption discussed above, and, as beginning or advanced logicians, we all know that an inconsistent set of assumptions allows us to derive anything. It is this apparent inconsistency that the next section is set out to resolve.

3. A Dynamic Binding approach to intervention effects on NPI licensing

The idea that strong NPIs are semantically interpreted as restricted variables can be happily married with the idea that every NPI denotes a (restricted) existential quantifier if we adopt the framework of Dynamic Semantics, as presented in Chierchia (1995). In that theory, we can 'disclose' an existential quantifier by applying Existential Disclosure to it. This operation will be defined in section 3.1. On the basis of that definition, we expect the application of Existential Disclosure to be conditioned by Inaccessibility, which will then be discussed in section 3.2. The fact that we need to apply Existential Disclosure to indefinite NPIs to get the semantics right, in conjunction with the fact that the harmful intervening expressions for NPI licensing necessarily scope under a c-commanding 'negative' trigger, as will be established in section 3.3, allows us to treat the intervention effects on NPI licensing as Inaccessibility effects. This means that the same principles of Dynamic Semantics that account for the latter effects carry over to yield the former as well, as we will show in section 3.4.

3.1 Dynamic Binding and Existential Disclosure. Dynamic Semantics offers a straightforward way of treating an existentially quantified term as if it were a restricted variable. The operation that does the job is coined Existential Disclosure, and can be defined as in (9).[4]

(9)   **Definition: Existential Disclosure (ED)**
        $\underline{\lambda}x'.\ \phi =_{def} \lambda x.\ \phi \underline{\wedge} \uparrow x' \leq_{P'} x$

From now on, we will adopt the notational conventions introduced by Chierchia (1995), according to which dynamically interpreted quantifiers, operators and logical connectives will be underlined, whereas dynamically interpreted predicates will be preceded by a '↑'. Even though the precise semantic properties that separate a 'static' semantics from a dynamic one will be of no immediate concern to us here (cf. Groenendijk & Stokhof 1991 for detailed discussion), we will address one crucial distinction that will be relevant shortly hereafter.

   We can illustrate the mechanics of ED by showing how (9) provides a simple, compositional procedure for deriving the semantics of the elementary NPI construction in (1), repeated below as (11a). Recall that we assumed in the preceding section that its meaning is most adequately expressed by the

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[4] The definition of Existential Disclosure in (9) is essentially a reformulation of Chierchia's (1995) definition of this operation, as given in i), in terms of partial orderings.

   (i) $\underline{\lambda}x'.\ \phi =_{def} \lambda x.\ \phi \underline{\wedge} \uparrow x' = x$

Arguably, (9) is to be preferred over Chierchia's formulation as it actually exploits a semantic property of the indefinite expression that is in need of disclosure. However, it should be added that the core of our analysis could be stated in Chierchia's framework as well.

representation in (8c). Let us first assume that NPI constructions of this type are fed into the semantics with the indexing in (10a). Its proposed semantics in terms of ED reads as in (10b). We will henceforth say that in constructions such as (10a), Q *dynamically* binds the strong NPI.

(10) a $Q_{i,j}$: NP_i [$_\phi$ ... strong $NPI_{k,j}$ ...]
     b $\underline{Q}$: $\lambda x_i \underline{\lambda} x_k.\ \uparrow NP' \underline{\wedge} \phi$

Note that '$\underline{\wedge}$' in (10b) simply translates the intersectivity of Q in dynamic terms.

Thus, in accordance with the conventions stipulated in (10), the structure in (11a) receives the semantics represented in (11b) (where 'P' stands for 'person'', 'R-C' for 'red-cent'', and so on). By virtue of our definition of ED in (9), (11b) reduces to the representation in (11c).

(11) a   *$No_{i,j}$ -one$_i$ gave the beggar a red cent$_{k,j}$*   (cf. 1)
     b $\underline{NO}$: $\lambda x_i \underline{\lambda} x_k.\ \uparrow P(x_i) \underline{\wedge} \underline{\exists} x_k [\uparrow R\text{-}C(x_k) \underline{\wedge} \uparrow G(x_i, \underline{\iota} y [\uparrow B(y)], x_k)]$
                                                                                              $=_{def}$ (9)
     c $\underline{NO}$: $\lambda x_i \lambda x_j.\ \uparrow P(x_i) \underline{\wedge} \underline{\exists} x_k [\uparrow R\text{-}C(x_k) \underline{\wedge} \uparrow G(x_i, \underline{\iota} y [\uparrow B(y)], x_k)] \underline{\wedge}$
         $\uparrow x_k \leq_{R\text{-}C} x_j$

Now, it would appear that in (11c), the occurrence of x_k that is introduced by ED (i.e. its fourth occurrence) counts as free, as it is outside of the syntactic scope of the existential quantifier which is supposed to bind it. This is exactly the point where the dynamic properties of the semantics we are assuming here become crucial. For present purposes, it suffices to look at Dynamic Semantics as an extension of Predicate Logic (enriched with Generalized Quantifiers), in which the notion of scope has been strengthened. This fundamental distinction is most readily perceived in the light of the following, basic theorem of Dynamic Semantics (cf. Groenendijk & Stokhof 1991), according to which the scope of an existential quantifier can be extended to the right indefinitely.

(12)   **Fact.** $\underline{\exists} x [\phi] \underline{\wedge} \chi \leftrightarrow \underline{\exists} x [\phi \underline{\wedge} \chi]$

Note that in Predicate Logic, however, the equivalent of (12) only holds just in case χ contains no free occurrences of x.

On the basis of (12) then, we know that the apparently problematic (11c) can in fact be reduced to (11d) below. The occurrence of x_k that was introduced by ED is now properly bound by the existential quantifier.

(11) d $\underline{NO}$: $\lambda x_i \lambda x_j.\ \uparrow P(x_i) \underline{\wedge} \underline{\exists} x_k [\uparrow R\text{-}C(x_k) \underline{\wedge} \uparrow G(x_i, \underline{\iota} y [\uparrow B(y)], x_k) \underline{\wedge} \uparrow x_k \leq_{R\text{-}C} x_j] \leftrightarrow$
     e $\underline{NO}$: $\lambda x_i \lambda x_j.\ \uparrow P(x_i) \underline{\wedge} \uparrow R\text{-}C(x_j) \underline{\wedge} \uparrow G(x_i, \underline{\iota} y [\uparrow B(y)], x_j)$

The inference from (11d) to (11e), the semantics of which is fully equivalent to that of (8c), as desired[5], constitutes the core of ED. Its validity derives from common sense: for any x, x is an amount of money just in case there is a (minimal) amount of money which is smaller than or equal to x. More generally, the inference from (11d) to (11e) is but a particular instantiation of the following equivalence, the truth of which is easy to intuit.

(13)   **Fact.** $\lambda x. \exists x' [\uparrow Px' \underline{\wedge} \uparrow x' \leq_P x] \leftrightarrow \lambda x. \uparrow Px$

Concluding this section, we have seen that for a 'negative' trigger to dynamically bind a strong NPI, the NPI needs to be subjected to ED. This operation crucially relies on the ability of an existential quantifier to extend its scope beyond its syntactic domain, as expressed formally in (12). Since, as we will discuss in the next section, there are well-defined environments that impair this ability, we would expect these same environments to block the application of ED as well.

3.2 Inaccessibility. Consider in the abstract a case where a nominal phrase *DP* cannot bind a pronoun *P* that it does not c-command. Suppose furthermore that LF is the level of representation where scopal properties are disambiguated. The question we want to raise here is this: Can an indefinite expression that occurs within the scope of *DP* at LF still bind *P*? According to *Inaccessibility*, the answer is: No. This constraint on non-c-command anaphora can be formulated as in (14).

(14)   **Inaccessibility**
         * ... [$_\alpha$ DP ... indefinite$_i$ ...] ... pronoun$_i$ ...
         where DP cannot bind a pronoun that it does not c-command, and
         where α demarcates DP's c-command domain

Now, the following examples reveal an interesting pattern: the Q-NPs which we have shown in (4) and (6) to interfere with NPI licensing all induce Inaccessibility effects in the sense of (14). The interested reader is referred to Kamp & Reyle (1993) for detailed arguments that support the claim that the italicized expressions in (15) can never bind pronouns that they do not c-command.[6]

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[5] We will simply note here that this equivalence follows from the fact that the meaning of a quantificational determiner such as 'no', which is *(externally) static* in the sense of section 3.2, is exhausted by its static truth-conditions (cf. Chierchia 1995).

[6] 'S > O' is meant to indicate the reading on which the subject takes scope over the object.

(15) a *At most/least three students* bought a car$_i$ (S > O). It$_i$ was quite
        expensive.

   b *Every student* bought a car$_i$ (S > O). It$_i$ was quite expensive.

   c *No student* bought a car$_i$ (S > O). It$_i$ was too expensive.

Because of their inability to support non-c-command anaphora, we may call
the generalized quantifiers denoted by the italicized DPs in (15) *static*.
Conversely, since referential expressions, singular indefinites and collectively
construed, bare numeral indefinites can support non-c-command anaphora, and
therefore never create inaccessible domains for these anaphora, we will call the
generalized quantifiers denoted by these DPs *dynamic*. The following theorem of
Dynamic Semantics, which follows from the fact that static generalized quanti-
fiers Q^{stat}: *NP* cannot have scope beyond their syntactic domain (cf. Chierchia
1995), derives the ill-formedness of the anaphoric dependencies depicted in (15).

(16)   **Fact.** $Q^{stat}x$: $\uparrow\phi$ ($\exists y$ [$\uparrow\chi$]) $\underline{\wedge}$ $\uparrow\psi$ $\not\Leftrightarrow$ $Q^{stat}x$: $\uparrow\phi$ ($\exists y$ [$\uparrow\chi$ $\underline{\wedge}$ $\uparrow\psi$])

For instance, the impossibility of the anaphoric dependency in (15a) is formally
reflected by the impossibility of inferring (17b) on the basis of (17a). This is due
to the dynamic principle in (16).

(17) a <u>AT MOST THREE^{stat}x</u>: $\uparrow S(x)$ ($\exists y$ [$\uparrow C(y)$ $\underline{\wedge}$ $\uparrow B(x, y)$]) $\underline{\wedge}$ $\uparrow Q$-E(y)
                                                          $\not\Leftrightarrow$ (16)

   b <u>AT MOST THREE^{stat}x</u>: $\uparrow S(x)$ ($\exists y$ [$\uparrow C(y)$ $\underline{\wedge}$ $\uparrow B(x, y)$ $\underline{\wedge}$ $\uparrow Q$-E(y)])

Now, we would like to treat the intervention effects on NPI licensing on a par
with the Inaccessibility facts just reviewed, so that the principle in (16) can be
carried over to rule out the cases observed in (4) and (6) as well. In order to do
so, we have to make sure first that the variable that is introduced by ED (i.e. x'
on the right-hand side of the equation in Definition 9) occurs outside of the
syntactic scope of the harmful intervening expressions. In other words, we need
to ensure that the harmful intervening expressions in NPI constructions fail to
take inverse scope over a c-commanding 'negative' trigger. This constitutes the
subject matter of the following section.

3.3 Scope. The italicized expressions in (15) do not only constitute a natural class
with respect to Inaccessibility. They also share the important property that they
are unable to take inverse scope over a negative quantifier that c-commands
them. This is shown for a representative subset of the relevant expressions in (18)
for English (similar judgements obtain for the corresponding sentences in Dutch).

(18) a Noone gave at most three students homework   ($\checkmark$S > IO, *IO > S)
         S > IO: *It is not the case that there is anyone who gave at most three
         students homework*
         IO > S: *At most three students are such that noone gave them home-
         work*
      b Noone gave at least three students homework   ($\checkmark$S > IO, *IO > S)
      c Noone gave every student homework   ($\checkmark$S > IO, *IO > S)

This failure to take inverse scope over a c-commanding negative quantifier may
be attributed to various sources. For instance, it may be blamed on general
(syntactic or semantic) principles that prohibit the relevant Q-NP from taking
inverse scope over any given quantificational expression, as has been argued for
the Q-NPs in (18a and b) by scores of scholars working on quantifier scope (cf.
Ben-Shalom 1993, Beghelli & Stowell, to appear, among others). Or it may be
blamed on some specific (syntactic or semantic) principle that does not allow
negative quantifiers to act as 'shares' for distributive quantification[7], as has been
urged by Beghelli & Stowell (to appear) for cases such as (18c). Whatever the
ultimate explanation for the facts in (18) may turn out to be, it should be clear by
now that the generalization exemplified by (18) allows to us to treat the interven-
tion effects on NPI licensing on a par with the Inaccessibility facts discussed in
the preceding section.

3.4 Dynamic Binding, ED and intervention effects on NPI licensing. Recall that
we assumed that for a 'negative' trigger to license a strong NPI, it must dynami-
cally bind it. This assumption entails in our present dynamic set-up that we must
apply ED to the strong NPI so that we can wipe out the existential quantifier
which is semantically associated with this indefinite expression. If we apply this
doctrine to any of the problematic cases presented earlier in (4) and (6), we
inevitably run into a problem. Since, as we saw in the preceding section, the
intervening Q-NP cannot take inverse scope over the c-commanding 'negative'
trigger, the variable introduced by ED cannot be bound by the (restricted)
existential quantifier which interprets the strong NPI. This follows from the
dynamic principle in (16) which derives Inaccessibility. The 'negative' trigger
can therefore not dynamically bind the strong NPI in constructions such as (4)
and (6), leaving the NPI without a proper licensor. We have thus succeeded in
reducing the intervention effects on NPI licensing to the same dynamic principle
that accounts for Inaccessibility.

   The above argument can be fleshed out by considering the ill-formed sentence
in (4a), repeated below as (20a). The question that should be addressed is

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[7] Note in this respect the ill-formedness of *The students read no book each*, as opposed to the
perfectly grammatical *The students read two books each*.

whether ED allows us to compositionally derive a meaning for this sentence which expresses the same content as the representation in (19) (where 'P' stands for 'person´', 'B' for 'beggars´', and so on). We will recall from section 2 that (19) conforms to the general semantics we assumed for NPI constructions.

(19)   NOx,z: P(x) ∧ AT MOST THREEy: B(y) (R-C(z) ∧ G(x, y, z))

Note first that the c-command relations that hold between the relevant NPs in (20a) will reflect the scopal ordering of the corresponding quantifiers at LF, in line with what we observed in the preceding section. In accordance with the conventions stipulated in (10), (20a) is interpreted in terms of ED as in (20b). This in turn reduces to (20c) by virtue of the definition of ED in (9).

(20) a   *$Nie_{i,j}$-$mand_i$ gaf hoogstens drie zwervers *ook maar een* $stuiver_{k,j}$ (cf. 4a)
     b   <u>NO</u>: λx_i λx_k. ↑P(x_i) $\underline{\wedge}$ <u>AT MOST THREE^{stat}</u>y: B(y) (∃x_k [↑R-C(x_k) $\underline{\wedge}$
         ↑G(x_i, y, x_k)]) $=_{def}$ (9)
     c   <u>NO</u>: λx_i λx_j. ↑P(x_i) $\underline{\wedge}$ <u>AT MOST THREE^{stat}</u>y: B(y) (∃x_k [↑R-C(x_k) $\underline{\wedge}$
         ↑G(x_i, y, x_k)]) $\underline{\wedge}$ ↑x_k $\leq_{R\text{-}C}$ x_j ⇸ (16)

Due to the dynamic principle stated in (16), we cannot infer (20d) on the basis of (20c). This situation exactly mirrors what we saw earlier in connection with the Inaccessibility case in (17). But then, by transitivity, we cannot infer (20e) on the basis of (20c) either, where (20e) would have expressed the same content as (19) (cf. footnote 4). Since there is no way then for the 'negative' trigger to dynamically bind the strong NPI, it cannot license it. In this way, we have reduced the ill-formedness of (20a) to general, dynamic constraints on anaphora that are not c-commanded by their antecedents.

(20) d   <u>NO</u>: λx_i λx_j. ↑Px_i $\underline{\wedge}$ <u>AT MOST THREE^{stat}</u>y: ↑By (∃x_k [↑R-Cx_k $\underline{\wedge}$
         ↑Gx_i, y, x_k $\underline{\wedge}$ ↑x_k $\leq_{R\text{-}C}$ x_j])   ⇹ (13)
     e   <u>NO</u>: λx_i λx_j. ↑P(x_i) $\underline{\wedge}$ <u>AT MOST THREE^{stat}</u>y: ↑B(y) (↑R-C(x_j) $\underline{\wedge}$
         ↑G(x_i, y, x_j))

    I will leave it to the reader to convince him/herself that an analogous reasoning will apply to rule out the other cases of intervention effects on NPI licensing as well.

4. Extensions and comparisons

The distinction between weak NPIs such as *any* and strong NPIs such as *a red cent* has been widely discussed in the literature (cf. for instance Zwarts 1981, 1986, and Van der Wouden 1994). Even though the difference between weak and strong NPIs may be significant from the point of view of what expressions count

as potential triggers for them, both types of NPIs are equally sensitive to intervention effects, as shown by Linebarger (1987) and Jackson (1994). The reason why I chose not to treat the intervention effects on weak NPIs on a par with those on strong NPIs resides in the fact that, for weak NPIs, we cannot assimilate the licensing relationship between trigger and polarity item to the mechanism of 'unselective' binding, as we did with the licensing of strong NPIs. If we were to extend the same mechanism to the licensing of strong NPIs, we would ascribe the wrong semantics to sentences such as *Less than five people said anything*. This sentence does not mean that there were fewer than five pairs of people and things said. For concreteness, I will assume, along with Krifka (1991), that weak NPIs can be thought of as focusing operators. Specifically, the lattice sorts with which weak NPIs are associated determine a set of alternative propositions ALT (Φ), where Φ represents the proposition expressed by the relevant sentence. By construction, any member Φ' of ALT (Φ) will be less informative than Φ itself, as Φ entails Φ'. For instance, if Φ = (21a), then ALT (Φ) is the set of alternatives to Φ each member of which the result of applying (21b) to some $y \in L_{thing}$, distinct from **anything**$'$.

(21) a LESS THAN FIVE^{stat}x: $\uparrow$people$'$(x) $\wedge$ $\exists$y [$\uparrow$thing$'$(y) $\wedge$ $\uparrow$said$'$(x, y)]
  b λy. LESS THAN FIVE^{stat}x: $\uparrow$people$'$(x) $\wedge$ $\uparrow$thing$'$(y) $\wedge$ $\uparrow$said$'$(x, y)

Thus, (21a) is more informative than for instance *Less than five people said that president Clinton will be reelected*, whose denotation belongs to ALT (21a). Note that this entailment pattern only applies to monotone decreasing quantifiers as triggers.

This proposal entails that the construction of ALT (Φ) would still require us to disclose the weak NPI in the sense of (9). Consequently, intervention effects on the licensing of weak NPIs such as *any* can still be reduced to the same dynamic principle (viz. 16) that accounts for Inaccessibility. This is fully consistent with the line we took on the intervention effects on strong NPIs in the preceding section.

Finally, we should briefly consider alternative approaches to intervention effects on NPI licensing that have been proposed in the literature. Without going into all the technical details of these analyses, I think it is fair to say that all of them analyze these intervention effects in terms of the defining property of NPIs that they require a 'negative' trigger. This is not only true for Linebarger's (1987) approach in terms of her Immediate Scope Constraint, but also for the one advanced by Kas (1993) in terms of preservation of Boolean properties under function composition, and the one developed by Jackson (1994) in terms of negative witnessing. This means that if the same intervention effects which we observed in the case of NPI constructions also show up in those contexts where 'negativity' is not at stake, the above approaches face a conceptual problem. Now, it turns out that we can make a very strong case for the following descriptive generalization, which is inspired by de Swart (1992):

(22)   *The Intervention Generalization*
        All (other) constructions in which a quantificational expression needs to
        bind an indefinite DP as its restriction evidence the exact same sensitivi-
        ty to intervention effects as NPI constructions.

This generalization can be illustrated by a variety of constructions, such as the
Dutch *wat voor*-split and *wat aan*-split constructions and *combien*-extraction in
French, but for reasons of space we must leave it at this suggestion.

    Concluding this paper then, we may observe that, while problematic for any
approach that treats the intervention effects on NPI licensing as an idiosyncratic
property particular to NPI constructions, the Intervention Generalization in (22)
fully squares with the predictions that follow from our dynamic approach. Since,
in our terms, in all the constructions alluded to in the generalization, the quantifi-
cational expression needs to dynamically bind the indefinite DP, our dynamic
binding account of the intervention effects on NPI licensing immediately carries
over to these constructions as well. Provided, of course, that the meaning of the
indefinite DP naturally admits of a partial ordering, as I argued elsewhere (cf.
Honcoop 1995) to be true of the indefinite remnant in the *wat voor*-split construction.

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