Conventional Form
Author(s): J.-Marc Authier
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J.-Marc Authier
University of Ottawa

The central objective of this paper is to present arguments in favor of the existence of two interacting components which encode the syntactically-relevant aspects of semantic interpretation. I will argue that binding constraints are sensitive to this distinction between two components at the syntax-semantics interface and that these components guide the semantic interpretation of linguistic expressions in ways expressible in terms of Herzberger's (1973) "two dimensional" logic or Karttunen and Peters' (1979) translation to ordered pairs of formulas of the type: <extension expression; implicature expression>.

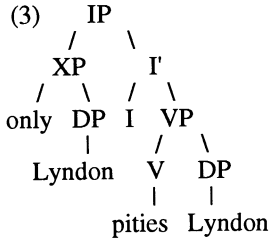
It has been known for some time that linguistic expressions such as even and only, which can be thought of as adverbial operators taking nominals, predicates, sentences, etc. as their focus, create exceptions to the well-known constraints on A-binding whenever they attach to a potential binder for an R-expression or a pronominal. Consider in this respect the sentences in (1) where the underlined nominals are licitly taken to denote the same individual:

(1) a. Only Lyndon pities Lyndon. (McCawley 1970)
b. Only Churchill remembers Churchill('s) giving the speech about blood, sweat, toil and tears. (Fodor 1975)
c. Everyone has finally realized that Oscar is incompetent. Even he has finally realized that Oscar is incompetent. (Evans 1980)
d. Only John expects for him to win. (adapted from Higginbotham 1980)

As pointed out by Grodzinsky and Reinhart (1993), previous attempts to capture these apparent exceptions to Condition C and Condition B of the Binding Theory either account for only part of the paradigm in (1) or overgenerate in that they cannot distinguish between, say, the grammaticality of examples like (1c) and (1d) and the ungrammaticality of examples like the ones in (2).

(2) a. *Oscar is sad. He thinks that Oscar is incompetent.
b. *John is happy. John expects for him to win.

Of interest is the fact that the minimal pairs (1c) vs. (2a) and (1d) vs. (2b) seem to indicate that these apparent violations of the Binding Theory correlate with the presence of words like even and only, which focus the potential binder for the R-expression or the pronoun. One syntactic explanation directly tied to the example in (1d) is provided by Higginbotham (1980), which relies on the crucial assumption that since John does not c-command him in (1d), the two expressions can be coreferential since no binding actually takes place. The configuration for (1a) could then be assumed to be as in (3), a structure which does not yield a violation of Condition C.



If we adopt this view that only embeds the phrase that it focuses in such a way that the latter cannot c-command elements outside of the only-phrase and if we further extend these assumptions to even, then the apparent violations of the Binding Theory examined so far follow in a straightforward fashion. However, as we will see, much more is involved here than a simple c-command problem.

The type of binding theoretic problems raised by focusing elements like even and only in fact are not limited to A-binding. Both Wasow (1972) and Postal (1993) point out that it seems to also be relevant to the A-bar binding system in that it plays a role in the determination of weak crossover effects. This is illustrated by the contrasts in (4) and (5), taken from Postal's (1993) paper:

(4) a. *Which lawyer$_i$ did his$_i$ clients hate t_i ?
b. Which lawyer$_i$ did even his$_i$ clients hate t_i ?
c. Which lawyer$_i$ did only his$_i$ older clients hate t_i ?
d. Which lawyer$_i$ did his$_i$ own clients hate t_i ?

(5) a. *the lawyer$_i$ who$_i$ his$_i$ clients hate t_i
b. the lawyer$_i$ who$_i$ even his$_i$ clients hate t_i
c. the lawyer$_i$ who$_i$ only his$_i$ older clients hate t_i
d. the lawyer$_i$ who$_i$ his$_i$ own clients hate t_i

As Postal emphasizes, these contrasts are triggered not by the status of the moved wh-phrase (as shown by the (a) examples) but, rather, by the nature of the phrase containing the pronoun. In particular, the apparent violations of the weak crossover constraint occur when the pronominal is embedded in a phrase which is itself the focus of a word like even or only. Of crucial importance to the discussion at hand is the fact that the weak crossover constraint prohibits the bound variable reading of a locally A-bar bound pronominal which is not in a c-command relation with the wh-trace sharing its index. Higginbotham's account of sentences like (1d), which relies on the lack of c-command between the phrase focused by only and the coindexed phrase located lower in the structure, has therefore no impact on the facts in (4) and (5). Yet it would be rather surprising if the influence of only and even on disjointness A-binding requirements illustrated in (1) and their parallel influence on disjointness A-bar binding requirements illustrated in (4) and (5) turned out to be purely coincidental.

Now Higginbotham's account of sentences like those in (1) also includes the assumption that only-phrases QR at LF. One might then conjecture that perhaps what allows the violation of weak crossover in the grammatical examples of (4) and

(5) is the fact that the pronominal functioning as a bound variable is contained in a quantificational phrase. Assuming that the whole quantificational phrase is pied piped at LF, one could then stipulate that weak crossover does not apply to LF representations which contain a locally bound pronoun embedded in a subject argument phrase in an adjoined position. However, the facts in (6) militate against this hypothesis:

(6) a. *Who$_i$ did every one of his$_i$ clients hate t$_i$?
b. *Who$_i$ did some of his$_i$ clients hate t$_i$?
c. *Who$_i$ did none of his$_i$ clients hate t$_i$?

What the sentences in (6) show is that embedding the offending bound pronoun in a quantificational phrase known to undergo QR at LF does not allow the created configuration to escape weak crossover effects. From this we must conclude that even if we assume that only-phrases have quantificational status and QR at LF, we are still no closer to an explanation as to why a bound pronominal embedded in an only-type phrase in subject position can circumvent the weak crossover constraint.

The same type of problem arises in conjunction with Progovac's (1992,1993) account of only-type phrases in subject position which, she argues, undergo wh-raising to the specifier position of CP at LF, thereby licensing a negative head of CP under Spec-head agreement and allowing negative-polarity items in their scope. Even if we adopt this assumption, we are no closer to an explanation as to why the grammatical sentences in (4) and (5) escape the effects of the weak crossover constraint since embedding the offending bound pronominal in a subject wh-phrase contained in a multiple interrogation structure does in no way circumvent weak crossover as shown in (7):

(7) *[Which lawyer]$_i$ did [which client that he$_i$ liked] fire t$_i$?

Note first that the ungrammaticality of (7) cannot be attributed to a superiority violation since the wh-phrases are D-linked in the sense of Pesetsky (1987). Further wh-phrases in situ in mutiple interrogations are assumed to undergo wh-raising at LF. Therefore, if the fact that only-type phrases undergo wh-raising was in some way responsible for the grammaticality of the well-formed examples in (4) and (5) we would expect the sentence in (7) to be grammatical as well, but this expectation is not fulfilled. Thus, we must again conclude that the explanation for the contrasts in (4) and (5) is not tied to the hypothetical LF movement of only-type phrases.

What I would like to argue here is that an adequate analysis of the problem just outlined must make reference to a component at the syntax-semantics interface distinct from (but not incompatible with) the syntactic level of LF. Specifically, I will propose that binding constraints may be satisfied at a level at which conventional implicatures are formally represented.

So far, we've established that words like even and only appear to somehow be at the root of some possible circumventions of disjointeness requirements in the A as well as the A-bar binding systems. Examples of this phenomenon are repeated in (8):

(8) a. Lyndon$_i$ pities only Lyndon$_i$ (circumvents Condition C)
b. Only John$_i$ expects for him$_i$ to win. (circumvents Condition B)
c. Which lawyer$_i$ did even his$_i$ clients hate t$_i$? (circumvents weak crossover)

That even and only are very closely related both in their grammatical behavior (as floating adverbials) and in their syntactic distribution is shown in some detail by Lycan (1991). There is, however, less agreement on what these two words have in common in terms of their interpretive contribution to the sentences in which they appear. Capturing the meaning of even has led to a considerable amount of discussion in the literature; see in particular Barker (1991), Bennett (1982), Ducrot (1973), Fauconnier (1976), Fillmore (1965), Horn (1969), Kay (1990), Karttunen and Peters (1979), and Lycan (1991). Of these, at least Horn (1969) and Lycan (1991) examine possible semantic connections between even and only, while Karttunen and Peters (1979) put forth what is perhaps the most formal treatment of the interpretive contribution of even. As a point of departure, let us consider the view found in Karttunen and Peters (1979) that the contribution of even to sentence meaning is that of conventional implicature. On this view, the word even in a sentence like (9a) does not play a role in determining the primary truth conditions of that sentence, since (9a) and (9b) express the same proposition and are therefore truth-conditionally equivalent.

(9) a. Even Mary drinks Elephant beer.
b. Mary drinks Elephant beer.

However, according to Karttunen and Peters, what the presence of even contributes to the meaning of a sentence like (9a) is the conventional implicature expressed by the two sentences in (10).

(10) a. Other people besides Mary drink Elephant beer.
b. Of the people under consideration, Mary is the least likely to drink Elephant beer.

To show that the part of meaning informally expressed in (10) cannot be treated at the same level as those aspects of meaning which are truth-conditional, Karttunen and Peters present the following argument: if we embed (9a) in a conditional, as in (11), then the speaker is no longer committed to the truth of (9b). However, uttering (11) commits the speaker to the implicata in (10) just as much as uttering (9a) did.

(11) If even Mary drinks Elephant beer, then all is well.

Further, they note that conventional implicatures cannot be dismissed as part of discourse pragmatics since they cannot be canceled or dissociated from the sentence. Thus, a speaker who utters (9a) while attempting to deny the truth of the conventional implicature carried by that sentence utters a contradiction as (12) shows:

(12) ! Even Mary drinks Elephant beer, but no one else does.

Before moving on to establishing the link between the conventional implicata introduced by even and only and binding constraints, it will be useful to examine the implicatum in (10b) more closely. Kay (1990) presents evidence that while (10a) is a conventional implicatum carried by (9a), the inference expressed by (10b) does not arise in all contexts and therefore is not, as Karttunen and Peters (1979) claim, a conventional implicature but rather, a pragmatic aspect of meaning. The example in (13), taken from Kay's paper, illustrates this point:

(13) A: It looks as if Mary is doing well at Consolidated Wiget.
George [the second vice president] likes her work.
B: That's nothing. Even Bill [the president] likes her work.

Kay's argument runs as follows: (13B) can be uttered in a situation in which nothing is assumed about the relative likelihood of George and Bill liking Mary's work. The fact that Bill's liking Mary's work is construable as evidencing a higher level of success than merely George's liking her work is sufficient to justify the use of even. From this we must conclude that the expectation violation expressed in (10b), which pervades numerous interpretive accounts of even, is a pragmatic aspect of meaning tied to the context of utterance and is therefore not to be treated on a par with the conventional implicature expressed by (10a).

Returning now to (10a), we may wonder what the logical representation of such an implicature might be. If we follow the natural language representation of the implicature given by Karttunen and Peters (1979) in (10a), we end up with the representation in (14), in which the existential quantifier has been substituted to the subject Mary in the original sentence (9a).

(14) $\exists$ x (x $\neq$ Mary) [x drinks Elephant beer]

The existential quantifier in (14) asserts the existence of at least one individual who drinks Elephant beer while the set over which the quantifier ranges is the set of humans made relevant by the discourse which excludes the individual Mary. Following Lycan (1991), let us further assume that even and only are in a contrariety relationship. To see this, consider the sentence in (15):

(15) Only Mary drinks Elephant beer.

While the semantic assertion associated with this sentence is the same as that found in Mary drinks Elephant beer, the conventional implicature which arises in conjunction with the presence of only in (15) is expressed by the sentence in (16):

(16) No one besides Mary drinks Elephant beer.

Once again we can represent this implicature by using the existential quantifier as in (17); that is, (17) denies the existence of any individual satisfying the description between brackets, it being understood that the relevant set over which the existential quantifier operates does not include the individual Mary.

(17) $\neg \exists$ x (x $\neq$ Mary) [x drinks Elephant beer]

The conventional implicature triggered by only in (15) is therefore obtained by substituting a variable bound by the (negated) existential quantifier for the subject Mary. The words even and only can thus be viewed as logical contraries at the level at which conventional implicatures are represented.

I take it as rather uncontroversial that any successful semantic theory must include at least those aspects of meaning which are independent from the pragmatic context. If so then we need to extend the notion of truth to include conventional meaning, while recognizing that the traditional notion of truth-conditional meaning and the notion of conventional meaning must be kept separate. This is because the truth of a conventional implicatum is guaranteed by the use of a lexical item (or a syntactic construction such as clefting) and remains unaffected by the logical words (such as negation) which may appear in its host sentence. This problem has in fact been discussed by philosophers and linguists alike (see for instance Putnam (1981) and Jackendoff (1983)). Suppose further that genuine semantic aspects of meaning, now including conventional meaning, are derived from the syntactic structure available at the syntax-semantics interface, putting together ideas proposed independently by Chomsky and Montague. If so then it would seem to follow that truth-conditional meaning and conventional meaning should be derivable from roughly the same structural representation. A proposal of this sort can be found in Reed (1993) where it is additionally argued that some conventional implicata are signaled by syntactic modules such as Case Theory and θ-Theory. More specifically, what I wish to suggest here is that conventional meaning is read off a syntactic structure. This structure is obtained by allowing words which carry conventional meaning such as even and only to substitute logical operators binding variables in positions dominated by the projections to which those words are adjoined in the syntactic LF component. As a concrete example, consider the LF representation in (18):

(18) [$_{IP}$ Even Mary [$_{VP}$ kicked John]]

Suppose that even, by virtue of its conventional nature, signals at LF the availability of a superimposed representation which is obtained by substituting to the noun phrase in the scope of even a variable which partakes in an (existential) operator-variable structure, satisfying the well-known ban on vacuous quantification. We then obtain the representation in (19):

(19) [$_{IP}$ ∃ x [$_{IP}$ x kicked John]]

Assume finally that any value assigned to an element marked for a conventional implicature at LF may not be assigned to the substituted variable. By so doing we ensure that the existential quantifier in (19) ranges over a set which excludes the individual Mary. This need not be a stipulation. Rather, this requirement can be seen as expressing the fact that elements already computed in the truth-conditional component may not enter in the computation of the superimposed component which expresses conventional meaning (call it conventional form or CF). We thus end up with two syntactic components at the syntax-semantics interface which each yield an independent semantic translation. Taken together, these translations make up what we mean by semantic interpretation. By assuming two superimposed syntactic components at the syntax-semantics interface, we are in effect reinforcing

the view that all semantic interpretation is read off a syntactic representation: LF will serve as the structure from which the denotation of a phrase is derived while CF will serve as the structure which guides the semantic translation of what the phrase conventionally implicates. This model accords with Karttunen and Peters' (1979) view that each sentence is associated with two expressions of intensional logic, namely, an ordered pair of formulas <extension expression; implicature expression>, where the extension expression is what is commonly known as truth-conditional meaning while the implicature expression is what is conventionally implicated by the sentence. Thus, extension expressions are associated with LF representations while implicature expressions are associated with CF representations. A similar syntax/semantics interface model can be built, using Herzberger's (1973) "two dimensional logic," since in Herzberger's system each sentence is associated with two binary semantic values: a correspondence value and a bivalence value, which roughly play the same role as Karttunen and Peters (1979) extension expression and implicature expression respectively.

A natural question which arises in connection with positing two syntactic components at the syntax-semantics interface is whether or not requirements which can be satisfied in LF can also be satisfied at CF. I would like to argue that this is precisely what's behind the apparent binding violations in (8). According to my hypothesis, the presence of only and even in the examples in (8) signal at LF the existence of a superimposed CF structure. The CF representations corresponding to these sentences are as in (20):

(20) a. $\neg$ [$\exists$ x (x $\neq$ Lyndon) [Lyndon pities x]]

b. $\neg$ [$\exists$ x (x $\neq$ John$_i$) [x expects for him$_i$ to win]]

c. [[which x] [$\exists$ y (y $\neq$ x's clients) [y hated x]]]

All of the representations in (20) contain a variable in argument position which is bound by an existential quantifier. The only condition put on the set of values over which these variables may range is that it must exclude the particular value(s) specified in parentheses. This condition, as I have already stated, simply expresses the fact that elements which trigger conventional implicatures have their referential value expressed once in the truth-functional (LF) component. This value may not be repeated as one of the possible values the variable element which is substituted for them in the CF component may take. As a result, the representations in (20) do not violate the binding constraints mentioned in (8) and the sentences in (8) are well-formed.[1] This indicates that binding requirements can be satisfied at either LF or CF for a derivation to converge, as expressed in (21):

(21) Given a sentence S containing an item Y subject to a binding constraint Z,
if Z is satisfied in the LF representation of S or if Z is satisfied in the CF representation of S then Y allows the derivation of S to converge.

The principle in (21) not only serves to capture the data examined so far but also takes a life of its own in that it naturally extends to cover a number of unexplained phenomena which until now were not thought to be related. For instance Postal (1972) and Authier (1993) point out that quizmaster questions, though they are

truth-conditionally indistinguishable from genuine wh-questions, appear to be immune to weak crossover effects. Consider in this respect the contrasts in (22) and (23):

(22) a. Mr. Smith, for $1,000, which secretary of state$_i$ did [the man who appointed him$_i$] later say t_i was an imbecile?
b. *By the way, which secretary of state$_i$ did [the man who appointed him$_i$] later say t_i was an imbecile?

(23) a. For $1,000, do you know which empty category$_i$ its$_i$ antecedent must A-bind t_i at S-Structure?
b. *By the way, do you happen to know which empty category$_i$ its$_i$ antecedent must A-bind t_i at S-Structure?

In Authier (1993), I suggest that the interpretive difference between quizmaster and genuine wh-questions is one of conventional implicature; that is, the intonational contour displayed in quizmaster questions signals the presence of an implicatum which can be informally characterized as in (24):

(24) The answer to my question is available to me.

The conventional nature of the implicatum in (24) is reflected by the impossibility of cancelling or dissociating such an implicatum from a quizmaster question without uttering a contradiction as shown in (25):

(25) ! For $10,000, do you know who was the first queen of England? I just have no way of finding out.

While in Authier (1993) I suggest that it is the availability of (24) which allows the apparent weak crossover violations in (22a) and (23a), I stop short of giving the exact circumventing mechanism at play in those sentences. However, given the theory I have just developed, such an account can now be provided.

Consider again the conventional implicature in (24). This implicature can be formally expressed at the level of CF by replacing the LF variable (and the A-bar chain it is a link of) with a constant representing the answer assumed to be available to the questioner uttering a quizmaster question. For ease of exposition let us call that constant John Doe. The CF representation for a sentence such as (22a) will then be as in (26):

(26) Mr. Smith, for $1,000, (tell me that) [the man who appointed him$_i$] later said John Doe$_i$ was an imbecile.

In this CF representation no violation of the weak crossover constraint is possible since the wh-trace/variable has been eliminated and the constant introduced is not c-commanded by the coindexed pronoun. By the principle in (21) the sentence in (22a) is therefore predicted to be well-formed. As further proof of the relevance of (21) to binding requirements, consider the fact, illustrated in (27), that quizmaster questions remain sensitive to the strong crossover constraint:

(27) *Mr. Smith, for $1,000, which secretary of state$_i$ did he$_i$ say was t$_i$ a genius?

According to what we said about how the conventional implicatum is reflected in CF, the representation of (27) at that level will be as in (28):

(28) *Mr. Smith, for $1,000, (tell me that) he$_i$ said John Doe$_i$ was a genius.

As can be seen, the strong crossover violation observable in the LF representation of (27) is not circumvented in its CF representation in (28). Strong crossover is often assumed to be a Condition C violation (variables being R-expressions with respect to the Binding Theory) and (28), which is obtained by replacing the variable with a constant (i.e., a name), simply duplicates this violation. As a result, (27) is rightly predicted to be ungrammatical.

The main purpose of this paper was to provide a theory of why some elements which induce conventional implicatures such as even and only seem to allow nominal elements to freely violate the well-known disjointness requirements operative in both the A and the A-bar systems. This was achieved by devising a model of the syntax-semantics interface which makes reference to a dual syntactic representation and can be characterized as in (29):

(29) a. Besides the syntactic level known as LF, there exists a syntactic level of representation called CF created by conventional inducing elements (or CIEs) which is obtained by modifying the LF representation in such a way that the phrase appearing in the scope of a CIE at LF is replaced by the operator-variable chain or constant corresponding to the relevant conventional implicature.

b. Principles such as Conditions B and C of the Binding Theory, and the weak crossover constraint may be satisfied at either LF or CF for a derivation to converge.

c. The syntactic levels of LF and CF have semantic correlates called extension expression and implicature expression respectively and these semantic representations are simply read off their syntactic counterparts. Thus, semantic meaning is closely guided by syntactic structure.

Notes

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1. As Ivan Sag has pointed out to me, my analysis straightforwardly extends to other conventional inducing elements such as too, a word which introduces a conventional implicature roughly equivalent to that carried by even. Consider in this respect the example in (i):

(i) As for Clinton$_i$, everyone voted for him$_i$. Clinton$_i$ voted for Clinton$_i$ too.

The CF representation of the second sentence in (i), given in (ii), does not violate Condition C and, as a result, (i) is rightly predicted to be well-formed.

(ii) $\exists$ x (x $\neq$ Clinton$_i$) [x voted for Clinton$_i$]

Further, as pointed out to me by Bill Ladusaw, the NPI either can also create a CF representation analogous to that created by too, which explains why sentences like (iii), the CF representation of which appears in (iv), can circumvent Condition C as well.

(iii) John$_i$ doesn't like John$_i$ either.

(iv) $\exists$ x (x $\neq$ John$_i$) $\neg$ [x likes John$_i$]

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