Polarity licensing and intervention by conjunction

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Abstract: The licensing of polarity items by negation and other operators may be disrupted by an intervening conjunction. Conjunction intervenes when the polarity item is a conjunct or part of a conjunct, and negation or another licensor is outside the conjunction, having scope over it. Intervention effects on the licensing of polarity items have been studied at least since Linebarger (1980), but not much empirical research has been done on the peculiar problems posed by intervention by conjunction. In this paper, I present evidence from corpus data (from English, Dutch and German) that the intervention effect noted in the literature is not always absolute and sometimes even nonexistent. Asymmetric types of conjunction are an important exception, and for a variety of polarity items even regular conjunction does not lead to any disruption of licensing.

Key words:

Polarity, negation, intervention, conjunction

1. Introduction[*]

Conjunction and disjunction play a major role in logic and linguistics. Cremers (1993) is a prime example of an important strand of research that addresses the issue of how these two fields need to interact and combine in order to tackle the difficult problems arising out of coordination, using the framework of categorial grammar (cf. also Steedman 1985, Dowty 1988). Zwarts (1986a) explores many of the connections between coordination and negation, in particular the licensing of negative polarity items, using a related categorial system. The licensing of polarity items by negative quantifiers constitutes a form of action at a distance. The polarity item need not be a direct argument of the negative operator, but might be several clause boundaries away from its licensor.

This state of affairs sometimes leads to intervention effects, where an intervening element makes it impossible for the polarity item to be licensed (Linebarger 1980, 1987 are the first important publications on this set of effects). Using the mechanism of function composition, Zwarts (1986b) and Szabolcsi & Zwarts (1991, 1993), tried to account for such intervention effects in a categorial framework. More recently, Chierchia (2013) has presented an account in which logic and generative grammar combine to describe and explain licensing and intervention. In this paper, I will discuss

one of the intervention effects discussed by Chierchia, namely intervention by conjunction, and present some data that are perhaps unexpected, and certainly problematic for that account.

What is intervention by conjunction? Chierchia (2013:392) offers the following examples to illustrate this phenomenon (which was already noted in Fauconnier 1975, and before him in Ross 1967:456):

(1)   a.   ??I doubt that John will both drink any wine and play the guitar.

              b.   ??I doubt that John will both play the guitar and drink any wine.

              c.   I doubt that John will either drink any wine or play the guitar.

              d.   I doubt that John will either play the guitar or drink any wine.

Note that there is a difference between conjunction and disjunction in these examples. The polarity item *any* in the disjuncts is just as acceptable as it would have been if it had not been embedded in a coordination, such as in (2):

(2)   I doubt that John will drink any wine.

Consequently, *and* serves as an intervenor, but *or* does not. By comparing (1a) and (1b), one may also see that the intervention effect is not sensitive to the order in which the conjuncts are combined. The effect, in other words, is symmetric.

In this paper, I take a look at Chierchia's account of judgements such as the above, and try to find out whether it can be maintained when we consider a broader range of facts. In section 2, I outline the account (only to the minimal extent needed for the purposes of this paper), in section 3 I discuss some issues in the study of coordination, and in section 4 I take a look at a variety of polarity items in the context of negated conjunction. Section 5 is a small diversion, dealing with the possibility of covert (LF) movement. Section 6 sketches some additional problems for Chierchia's account. Section 7 contains the conclusions.

2. Chierchia's account

Chierchia (2013) accounts for the conjunction intervention effect by means of implicatures. There is also a syntactic component to his analysis, which I will skip for the sake of brevity, as well as the broader issue of the status of implicatures: whether they are Gricean creatures arising from general principles of pragmatics, or grammatical entities (cf. Chierchia 2004, Russell 2006, Geurts 2010, Sauerland 2012, inter alii, for discussion).

The ungrammatical or marginal sentence in (3) below has the logical structure in (4) (cf. Chierchia 2013:381), which in turn generates the implicature in (5):

(3)   ??Theo didn't drink the leftover wine and any coffee.

(4)   ¬[Theo drank the leftover wine and Theo drank any coffee]

(5)   *Theo drank the leftover wine or Theo drank any coffee.

More generally, negations of conjunctions ($\neg(p \wedge q)$) generate positive disjunctions ($p \vee q$) as scalar implicatures, according to Chierchia. If the negative statement in (3) is enriched with the implicature, by taking the conjunction of the statement and its implicature, the structure is no longer downward entailing (cf. Ladusaw 1980, also Sánchez-Valencia 1991), due to the upward entailing property of the implicature. If a downward entailing context is required for *any* (Ladusaw 1980, Zwarts 1986a), this would rule out examples such as (3).

Implicatures thus take center stage in Chierchia's account, in this particular case the implicature arising from negated conjunction. Whether this implicature is always available remains to be seen, however. Atlas (2005:102) doubts it. He notes cases such as:

(6)   It's not the case that Kurt went to the store and bought some wine.

Here it would be odd to say that this implicates that Kurt either went to the story or bought some wine. Rather, the most plausible interpretation of this sentence would lead us to believe that Kurt did neither. But in that case we should be able to use *any* and it seems we can:

(7)   It's not the case that Kurt went to the store and bought any wine.

Example (6) is a negated version of what Schmerling (1975) has called asymmetric conjunction. Asymmetric conjunctions of this type have a causal/temporal interpretation that does not normally belong to the truth-conditional interpretation of negation as given by Boolean logic. They are called asymmetric because the conjuncts cannot be switched without a change in meaning. In other words, the commutativity property of Boolean $\wedge$ and $\vee$ does not hold. Clearly, for a logic-based account, such as the one proposed by Chierchia, this should have consequences.

3. Asymmetric conjunction

Asymmetric conjunction is a well-know exception to Ross' (1967:161) Coordinate Structure Constraint:

(8)   The Coordinate Structure Constraint

In a coordinate structure, no conjunct may be moved, nor may any element contained   in a conjunct be moved out of that conjunct.

Here are some examples provided by Ross to motivate this constraint :

(9)   a.   *The lute which Henry plays and sings madrigals is warped.

    b.   *The madrigals which Henry plays the lute and sings sound lousy.

Ross himself already noted cases such as (10) below, involving asymmetric conjunction, which are fine, in contrast to the cases in (9):

(10)   Here's the whisky which I went to the store and bought.[1]

As noted by Ross, there are all manner of restrictions on this kind of conjunction which do not hold for ordinary conjunction. Just adding a subject creates havoc:

(11)   *Here's the whisky which I went to the story and Mike bought.

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[1] Cf. also Haslinger & van Koppen (2002-3) for a Dutch asymmetric conjunction construction, the verbal hendiadys. This construction is found in a number of dialects (not the standard language) and has not been studied from the perspective of polarity licensing, to the best of my knowledge.

The extraction site for this type of conjunction is in the second conjunct. But the type exemplified by (10) is not the only kind of asymmetric conjunction to be found. Goldsmith (1985:135) gives examples of conjunctions with a concessive reading, where there is a possibility of extraction from the first conjunct only:

(12)   How much can you drink and not end up with a hangover the next morning?

(13)   How many counterexamples can the Coordinate Structure Constraint sustain and still be considered empirically correct?

Such cases are not just problematic for the Coordinate Structure Constraint, but also for theories which try to derive this constraint from general principles, such as GPSG (Gazdar 1981) and categorial grammar. Typically, they require a special treatment.

4. Polarity items in conjunctions

The following examples are evidence that some polarity items, such as *ever* and *any*, may appear in conjunctions:

(14)   Audrey Hepburn was not a person who could see bloated babies and ever forget it.[2]

(15)   [S]he could not look into the eyes of suffering people and ever sleep peacefully again.[3]

(16)   You couldn't have brought her along and have any kind of proper break yourself.[4]

These examples belong to the concessive subtype of asymmetric conjunction, noted in the previous section. In each case there is an opposition between the conjuncts. Similar examples can be given for other polarity licensers than negation, e.g. *few* or the protasis of conditionals:

(17)   Few students took any of Dr. Frankenstein's classes and lived to tell the tale.

(18)   If you have taken any of Dr. Frankenstein's classes and survived, you must be tougher than I thought.

(19)   If you had met her and known anything about her, you would have known she's an angel.

In some cases, there does not appear to be a concessive interpretation. Compare:

[2] Jerry Vermilye, *The Complete Films of Audrey Hepburn*. Citadel Press, New York, 1995, p 63.
[3] Ibidem.
[4] Kingsley Amis, *The old devils*, Penguin, 1987, p 283

(20)   a.   She'll never, never leave here and know anything about the outside world.[5]

        b.   Don't go calling anyone and reporting anything.[6]

        c.   I'll give you all the tips and tricks I know on how to make aromatherapy oils so you don't have to depend on anyone and anything else.[7]

        d.   if she goes to Savannah and so much as gets a speeding ticket she will be in violation of her bond[8]

The Dutch polarity item *ook maar* 'even' and its German counterpart *auch nur* (cf. Vandeweghe 1981, Zwarts 1986a, Hoeksema & Rullmann 2001 for discussion) can be used in conjunctions without much of a problem:

(21)   Niemand was er   die lachte en ook maar even

        Nobody was there who laughed and even   briefly

        meedeed.

        participated

        "There was nobody who laughed and participated even briefly"

(22)   Iedereen die ook maar iets tegen de dictator heeft en

        Everyone who anything at all against the dictator had and

        dat laat blijken krijgt   gevangenisstraf.

        that lets appear receives jail time.

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[5] Jack Kerouac, *On the road*, Penguin, 2006 [1957], p 297.
[6] http://community.lawyers.com/forums/t/34484.aspx
[7] http://www.essentialbazaar.com/how-to-make-aromatherapy-oils/
[8] http://www.city-data.com/forum/charleston-area/937110-anyone-their-kids-ever-been-busted.html

"Everyone who has any beef with the dictator and shows it, goes to jail"

In disjunctions, *ook maar* can also be used, but there is a certain preference to use *zelfs maar*, a variant of *ook maar*, in those cases (cf. Vandeweghe 1980, Hoeksema & Rullmann 2001).

A German example, involving *auch nur* and a minimizer NPI (*eine müde Mark* 'a tired Mark = a plugged nickle, a red dime') in a conjunction, is provided by the following sentence:

(23)   Keiner   im Vorstand hat sich bereichert und auch nur eine
        Nobody in   board   has self enriched and even   one
        müde   Mark in die eigene Tasche gesteckt.[9]
        plugged nickle in the own   pocket put
        "Nobody in the board has enriched himself and put even one
        plugged nickle in his own pocket."

Such examples are neither rare, nor in any way degraded.

Next, consider the Dutch cognate of *any*, the indefinite determiner *enig*. When combined with singular count nouns, this determiner is a negative polarity item with the peculiar diachronic property that it used to be a very weak polarity item of the type identified by Giannakidou (1998, 2011) for Modern Greek indefinites such as unstressed *kanenas*, and has more recently become a polarity item of the *any*-type, licensed in the same

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[9] http://www.wn.de/Archiv/2011/04/Rot-Weiss-Ahlen-Jenseits-von-Afrika

general set of contexts as *ever* and *any* (Hoeksema 2010). It turns out that conjunctions under negation are just fine for this item as well:

(24)   a.   Er   is geen verband tussen dit schoonmaakmiddel

There is no connection between this detergent

en   enige ziekte.
and any   disease

"There is no connection between this detergent and any disease"

(25)

            b.   Niemand bracht enig schoonmaakmiddel en deze

 Nobody brought any detergent   and this

ziekte met elkaar   in verband.
disease with each other in connection.

"Nobody connected any detergent with this disease"

Example (24a), by the way, shows structural similarities with an English sentence from H.G. Wells' *The Time Machine* (1895):

(26)   There is no difference between Time and any of the three dimensions of Space except that our consciousness moves along it.

Again we see no prohibition of *any* in the context of a negated conjunction.

In the case of verbal NPIs, there is no evidence of an intervention effect due to conjunction. Take for instance the case of *kunnen uitstaan* 'can stand' (cf. Van der Wouden 1994, 1997). The following sentence attests to the acceptability of this NPI in the context of a conjunction under negation:

(27)   Denk niet dat hij zulk gedrag   duldt   en   kan uitstaan.

         Think not that he such behavior suffers and can stand

         "Don't think he condones and can stand such behavior"

German sentences with similar structure, involving the NPI *ausstehen können* 'can stand', are possible as well:

(28)   Aber wen ich wirklich nicht leiden und ausstehen kann ist

         But   who I   really   not suffer and stand   can is

         Lockhart.[10]

         Lockhart.

         "But Lockhart is the one I really cannot suffer and stand"

(29)   Aber anstatt sich zu schleichen will   der Typ weitermachen

         But   instead refl to sneak-away wants the guy continue

         - wissend dass ihn hier kaum   jemand mehr   sehen und

         - knowing that him here hardly anyone anymore see   and

         ausstehen kann.

         stand   can

"But instead of sneaking away, the guy wants to continue –

knowing that hardly anyone can look at and stand him

anymore."

Another German polarity item is *bei Trost* 'in his right mind' (cf. Kürschner

1983).[11] It may likewise be found in conjunctions under negation:

(30)   Keine Frau,   die   erwachsen und bei Trost   ist, läßt sich

         No   woman who grown-up and in right mind is lets refl

         von dir aushalten.[12]

         by you keep

         "No woman who is grown up and in her right mind, lets

         herself be kept by you"

To sum up this section: For every NPI that we looked at, it was possible to

find or construct acceptable examples in which that NPI appears in a

negated conjunction.

5. Movement of NPIs: A Way Out?

Above, we looked at some cases where extraction from conjunctions is fine,

and where, at the same time, we may find occurrences of *any* or *ever* in one

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[11] For an extensive list of German negative and positive polarity items, by Frank Richter,
Manfred Sailer and many collaborators, see http://www.english-linguistics.de/codii/.
[12] https://www.elitepartner.de/forum/frage/sollte-es-beim-1-treffen-schon-funken.60744/

of the conjuncts, licensed by negation outside of the conjunction. Since the latter is ruled out by Chierchia's account, one scenario that might seem promising is one where polarity items are moved outside of the conjunction at LF, to be placed in a position closer to the licensing negation, and outside the reach of the intervening elements of the conjunction.

Movement accounts of NPIs are not unheard of. Progovac (1994) already proposed covert movement to deal with long-distance licensing. Guerzoni (2006) offers a related proposal, involving feature movement. However, there are some well-known problems for movement theories. NPIs may appear in syntactic islands, while their licensors appear outside. Movement accounts for NPIs would either have to predict ungrammaticality for such cases, or else assume that LF movement of NPIs forms an exception to the generalization that movement is subject to island conditions. The former is factually incorrect, the latter is ad hoc. In example (14) above, we have an occurrence of *ever* in a relative clause, triggered by negation outside a complex noun phrase. Such cases are in fact entirely run-of-the-mill, and in no way marginal or degraded. They constitute a potential violation of Ross' (1967) Complex Noun Phrase Condition.[13] Many of the

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[13] Some linguists seem to think that polarity licensing is subject to the Complex Noun Phrase Condition. Hagstrom (2008) presents the following sentence as evidence:
(i) * Mary didn't meet the man who gave her any present.
Here, the problem is not so much caused by the island context, but by the definite determiner, which creates an intervention effect. Szabolcsi & Zwarts (1991:30) illustrate this effect with the following minimal pair from Dutch, involving the polarity item *hoeven* 'need':
(ii) a. Geen kind kent   een man die hoeft te werken.
          No   child knows a   man who needs to work
      b. *Geen kind kent   de man die hoeft te werken.
          No   child knows the man who needs to work
It should be noted that this intervention effect may occasionally be lifted, in particular in *kind of*-contexts:
(iii) Well - from what you say the Count does not sound the kind of man who would actually kill anybody.
       (Agatha Christie, The mystery of the blue train [1928]).

cases of conjunction we looked at above are not compatible with overt extraction either. Hence covert movement should be ruled out by Ross' (1967) Coordinate Structure Constraint. Take for instance (25), and let's try to see if it allows for extraction out of one conjunct:

(31)   *What is there no difference between Time and --?

(32)   *What is there no difference between -- and any of the three dimensions of Space?

(33)   *Which concept is there no difference between Time and any of the three dimensions of --?

In Dutch and German, prepositional phrases form syntactic islands (with the exception of R-pronouns, irrelevant to the case at hand), and so these should not be able to host NPIs, but in fact such cases are absolutely fine:[14]

(34)   Keiner glaubt dass er mit auch nur einer Frau   geredet

         Nobody believes that he with even   any   woman talked

         hat.

         has.

         "Nobody believes that he has talked to any woman"

Similar observations hold for *hoeven* in Dutch:
      (iv)   Hij is niet het soort man dat hoeft te werken voor zijn geld.
               He is not the sort of man who needs to work for his money

[14] Unless one assumes that the entire PP is moved along with the NPI, by means of pied piping. For discussion of pied piping at LF, and some arguments against it, cf. Bayer (1996).

So what do the examples of extraction from conjunctions, given in (10), (12) and (13) show? They show that conjunction is not as uniform and general as it is sometimes cracked up to be. Extraction behavior exhibits diversity, and this paper shows that polarity items do the same. In some cases, specialized forms of conjunction, such as the concessive type discussed by Goldsmith (1985), form exceptions both to generalizations about extraction, and generalizations about *any*. In other cases, extraction may be impossible, and yet NPIs may still show up.

6. Further problems

If it is the case that pragmatic enrichment by implicatures creates or may create a non-downward entailing context, we should predict a similar effect in the restriction of universal quantifiers. A sentence such as

(35)   Every student who has ever taken this course liked it.

has an existential presupposition or implicature (it does not matter here which of the two it is, see e.g. De Jong & Verkuyl 1985, Geurts 2007 for some discussion).

This presupposition is entire positive:

(36)   Some student has taken this course.

But this should have the same negative effect on the licensing of NPIs in the restriction of the universal quantifier. However, the occurrence of *ever* in (32) is fine. If existential presuppositions (or implicatures) are to be ignored for the purposes of polarity licensing (as urged by von Fintel 1999, and as required if we want to analyze (32) in terms of downward entailment), then why should the positive disjunction p $\vee$ q not be equally ignored when computing the licensing properties of negation in $\neg(p \wedge q)$?

Another complicating factor concerns the fact that negated conjunctions do not always work in perfectly Boolean fashion (Hoeksema 1988, Szabolcsi & Haddican 2004). For the grammatical relevance of the distinction between Boolean and non-Boolean conjunction, see e.g. Van Koppen & Cremers (2008). Quite often, sentences such as

(37)   Jones did not eat and drink.

are used to describe a situation where Jones did neither. The regular Boolean interpretation ("not both") requires some sort of stress on the conjunction, as Szabolcsi & Haddican (2004) note:

(38)   Jones did not eat AND drink.

Clearly, under a *neither*-interpretation of a negation conjunction, there is no longer any reason why a polarity item would not be licit. The same applies to noun phrase coordination:

(39)   We don't want to play bridge with Mary and any of her

         friends.

Chierchia (2013:376) addresses this point in a footnote, where he states that his account only applies to the $\neg(p \wedge q)$ reading, not to the $\neg p \wedge \neg q$ reading. He presents an example similar to (38), cf. fn. 2, example (a):

(40)   Plus you don't have to worry about the transportation and any

         drunken drivers or pedestrians you might hit.

He suggests that this example is interpreted in the "conjunction reduction" way as: you don't have to worry about the transportation and you don't have to worry about any drunken drivers or pedestrians". If we suppose that conjunction reduction, or an equivalent mechanism, derives that reading for (40), then all cases of intervention by conjunction starred by Chierchia should actually be OK on one of their readings, and moreover, sentences with disjunction in the scope of negation should be equally ambiguous. That seems like a heavy price to pay. Note also that not all cases of failed intervention by conjunction discussed here can be ascribed to conjunction reduction. In fact, for most of the examples in section 4, conjunction reduction is neither needed nor warranted.

7. Conclusions

Chierchia (2013) proposed that the invention of polarity licensing by conjunction is due to pragmatic enrichment. A positive implicature, added to the negative context, makes this context no longer downward entailing, and this is why polarity items in negated conjunctions are bad.

We have seen, on the basis of corpus examples as well as some made up cases, that the intervention effect is quite often absent, for reasons that are not apparent. Many polarity items show no intervention effect at all, for others, like *any* and *ever*, there are contexts where the effect is missing. I conclude that Chierchia's theory does not handle the facts regarding *any*, nor does it generalize well beyond *any* to other types of polarity item.

Of course all of the above does not mean that polarity items are not more commonly found and generally more felicitous in negated disjunctions. But preferences are not rules of grammar. Chierchia has taken the Kadmon & Landman (1993) line on the licensing of *any*, according to which *any* is a device whose purpose is to strengthen an utterance. And intuitively, a sentence such as (40a) is stronger than (40b), especially when we emphasize the any:

(41) a. I don't need any money.

  b. I don't need money.

Under negation, disjunctions are stronger than conjunctions. This favors polarity items in disjunctions over polarity items in conjunctions, at least in

those languages where disjunction does not behave as a positive polarity item (cf. Szabolcsi 2004, Goro & Akiba 2004, Crain 2012, Spector 2014). But the effect may be quite weak (cf. e.g. Krifka 1995 for discussion), and does not lead to categorical differences between conjunction and disjunction.

In this paper, I focused on intervention by conjunction. Intervention by universal quantifiers is another area which needs to be studied more from an empirical perspective, but that will have to be saved for another paper.

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