

Information structure, syntax, and pragmatics and other factors in resolving scope ambiguity

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Abstract

The paper is a corpus study of the factors involved in disambiguating potential scope ambiguity in sentences with negation and universal quantifier, such as *I don't want talk to all these people*, which can alternatively mean ‘I don't want to talk to any of these people’ and ‘I don't want to talk to some of these people’. The relevant factors are demonstrated to be largely different from those involved in disambiguating lexical polysemy. They include the syntactic function of the constituent containing *all* (subject, direct complement, adjunct), as well as the deepness of its embedding; the status of the main predicate and *all* with respect to the information structure of the utterance (topic vs. focus, given vs. new information); pragmatic implicatures pertaining to the situations described in the utterances.

1 Introduction

Scope ambiguity is a wide-spread phenomenon, which is fairly well described in the studies of semantics-syntax interface. However, in actual communication we rarely experience difficulties in assigning correct scope to operators in the contexts which allow potential ambiguity. Unlike lexical polysemy, which is more frequently resolved by semantic factors, i.e. semantic classes of collocates, one of the crucial factors in resolving scope ambiguity is pragmatics. Consider the adverb *accidentally*, which presupposes an action and asserts its non-intentionality; cf. *I didn't cut my finger accidentally* = ‘I cut my finger [presupposition]; it was not intentional [assertion]’.

Accidentally can have wide scope readings as in (1), where it has scope over the verb and the modifier of time, and narrow scope readings as in (2) where it has scope only over the complement:

(1) *The house was accidentally [burnt in 1947]*

(2) *We accidentally planted [potatoes]*

Wide scope readings refer to purely accidental events and narrow scope readings denote mistaken intentional actions.

The readings are determined by pragmatics: *We accidentally planted [potatoes]* favors narrow scope, since in a plausible world, planting is deliberate; therefore, the mistake concerns only a certain aspect of this action. On a linguistic level, it means that the adverb *accidentally* affects only one argument of this verb (the object – the planting stock).

On the other hand, *The house was accidentally [burnt in 1947]* favors wide scope, since house-burning is normally unintentional; as for the possibility of a deliberate reading, an arson meant for a particular year is pragmatically implausible.

The discussion is mostly devoted to pragmatic and other factors that are at play in the interpretation of scope ambiguities in the combination of the universal quantifier *all* with negation. It is well-known, that in certain sentences with *all* and *not*, negation can have scope either over the verb, or over *all*, as in (1) and (2):

(3) *I did not [see] all these people ≈ I saw none of those people*
(*not* has scope over the verb)

(4) *I did not see [all] these people ≈ I saw some of these people* (*not* has scope over the universal quantifier)

Thus, the surface structure with negation, a verb and a quantifier phrase *not V all X* can be interpreted as either as (5) or (6) depending on whether negation has scope over the verb or over the universal quantifier.

(5) *not V all X* = not [V] all X (of all Xs, it is true that they are not V)

(6) *not V all X* = not V [all X] (it is not true that all Xs are V = some Xs are V and some Xs are not V)

Yet cases where both interpretations are equally feasible are quite rare. In the majority of cases, context provides sufficient clues as to the choice of the intended reading; cf.

(7) *I don't believe all this bullshit he [tells] me* (\approx 'I don't believe anything of what he tells me', negation has scope over the VP)

(8) *I don't agree with [all he says] but many things sound reasonable* (\approx 'I agree with part of what he says', negation has scope over the quantifier phrase)

2 Methods and material

The paper employs corpus methods. The material comes from the parallel Russian-English and English-Russian corpus, which is a sub-corpus of the Russian National Corpus (ruscorpora.ru). It counts 24,675,890 words and comprises 19-21 century Russian and English literature (mostly novels), as well as a certain amount of periodicals, in translations. Parallel literary corpus has been chosen because there is plentiful context to verify the correctness of the reading, which is further facilitated by the presence of the translation or the original. The use of a parallel corpus also enables one to conduct a contrastive study of the factors involved in disambiguation. These factors have been found to be the same for Russian and English, although English sentences with scope ambiguity of this type are on the whole more typical of English than for Russian, which favors constituent negation.

The search query has been formulated as *not + v + all*, with the distances set at 3 words. All contexts that preclude ambiguous readings in principle, such as various idiomatic expressions (*not at all*, *all of it*, *at all costs*, *after all*, *all the more*, *not only...but also* etc.); combinations of *all* with numerals (*all four*), deeply embedded clauses (*They told them not to stop running until they got all the way back to Tokyo*) have been excluded from the search. Total useful results yielded 147 hits.

3 Results and discussion

The distribution of the interpretations is as follows:

- 82 readings where *not* has scope over the universal quantifier, such as *You haven't told me [all] ≈ 'You have told me part of what you know'; I haven't eaten [all] the apples she bought* 'I have eaten some of the apples that she bought';
- 58 readings where *not* has scope over the matrix verb or another constituent, such as *I don't [give a heck] about all these idiots ≈ 'I don't give a heck about any of these idiots'; I didn't come all the way from Alabama [to hear you say that] ≈ 'I came all the way from Alabama for another reason';*

- 7 ambiguous readings.

As appears from these data, the actual ambiguity is indeed rather rare, though the distribution of the interpretations is not exactly balanced. Contexts when the universal quantifier does not fall into the scope of negation are less frequent, and can therefore be assumed more marked in terms of semantic, pragmatic, syntactic and communicative conditions.

4 Factors at play in scope disambiguation

The following factors appear to be relevant in the choice of interpretation:

- **Information structure** of the utterance, namely whether *all* is in the topic or in the focus;
- **Semantic structure** of the utterance, namely, whether the universal quantifier is presupposed;
- **Syntactic structure** of the utterance, namely whether there is a “competing” constituent that can “attract” negation in lieu of the universal quantifier;
- **Conventional implicatures**, namely what are the normal pragmatic expectations in the situations that are introduced by verbs and quantifier phrases.

Besides the factors listed above, there are some basic syntactic considerations that affect the possible readings; they are listed below.

If *all* is part of the **subject**, it usually requires constituent negation rather than sentence negation. Sentences like (9) are considerably less frequent than phrases like (10).

(9)[?] *All Russians are not gloomy*

(10) *Not all Russians are gloomy* (V. Nabokov, *Pale Fire*)

So, it seems to be that the universal quantifier has to be to the right of negation in order to be able to fall into its scope.

And in that case, it is most easily affected by negation if it is a **direct complement** to the syntactically negated verb, as in (11):

(11) *He didn't like all his students* ‘He liked only some of his students’

If *all* is part of the the **adjunct**, it is less accessible to negation, since certain adjuncts can move around more freely and can be fronted and topicalized, so (12) is more likely to be interpreted with negation scoping over the verb:

(12) *He didn't talk to me all this time* ≈ *All this time, He didn't talk to me*
‘The entire time, he didn't talk to me’

Also, if the constituent containing *all* is **deeply embedded**, it prevents negation from affecting the universal quantifier:

(13) *“Well...” and here Clyde hesitated and stumbled, quite as if he had not been instructed as to all this beforehand* (Theodore Dreiser, *An American Tragedy*) ≈ ‘He had been instructed as to all this beforehand, but hesitated and stumbled as though he hadn't’

On the whole, *all* is most flexible as part of direct complements and adjuncts and in this syntactic function allows, in principle, both scope interpretations. The factors influencing these interpretations are examined below.

5 Information structure of the utterance

5.1 Both *all* and the matrix verb are part of the Topic

When both *all* and the matrix verb are part of the Topic, they are normally presupposed, and not asserted, and therefore, do not fall under negation; cf. discussion in Hajičova (1973). Thus, in the utterances where the universal quantifier *all* and the matrix verb are in the topic, negation has scope over the remaining constituent, usually the verbal adjunct:

(14) *I have not said all this* | [*in order to annoy you*]

In (9), the fact of saying certain things (*I have said all this*) is Topic, and the purpose of this speech act (*not in order to annoy you*) is Focus. Negation, as a typical focalizing component, does not affect the topic part, and therefore, *all* and the matrix verb remain presupposed and outside of the scope of the negative operator. Syntactically, adding a constituent that can “attract” negation helps create conditions for this type of information structure and interpretation. Negation shifts both from the universal quantifier and from the matrix verb to the purposive adjunct. Compare (14) with (15) which can only be interpreted as ‘I have said some things but not all’, where *all* is in the Focus and negated:

(15) *I have not said* | [*all*]

In the absence of a contracted proposition *in order to annoy you* a non-negated quantifier reading is not available.

A subtype of sentences with this information structure are phrases with another universal quantifier which creates a target for constituent negation. In sentences like (16) and (17) both the verb and the *all*-phrase are in the topic and the negated quantifier forms a contrastive focus.

(16) She had not [**ONCE**] [contrastive Focus] thought of him all the morning [Topic] [Leo Tolstoy. *Anna Karenina* (parts 5-8) (Constance Garnett, 1911)]

(17) And not [**a CREATURE**] [contrastive Focus] coming near us all the evening! [Topic] [Jane Austen. *Persuasion* (1816)]

5.2 *All* is given information, the matrix verb is new information¹

In this type of sentences, *all* constitutes given information, although it is usually part of the Focus, along with the verb; it is presupposed and does not fall into the scope of negation. However, the matrix verb, which is either non-factive or is placed in a non-veridical context (Giannakidou 1998) constitutes new information and is not presupposed. Therefore, negation has scope over the matrix verb, but not over the universal quantifier:

(18) I'm not [**going**] all the way to Huntingdon to celebrate the ruby wedding of two people I have spoken to once for eight seconds since I was three (Helen Fielding, *Bridget Jones's Diary* (1996)) ≈ ‘All the way to Huntingdon to celebrate the ruby wedding... [given information, presupposition]; I am not going [new information, assertion]’ ≈ ‘I am not going to Huntingdon at all for the ruby wedding’

The choice between interpretation in phrases like (18), on the one hand, and (19), on the other, frequently depends on the sentence type. Veridical contexts, like (19), license the factual interpretation

¹ For this type of sentences, it is more meaningful to distinguish between given information and new information. Universal quantifier *all* is given, it belongs to the background knowledge, and the verb is new. As for Topic-Focus structure, because sentences in this type are usually non-veridical, they tend to consist entirely of focalized information; cf. *I don't know what to do with all this food* (information about the food is presented as known to the listener, yet it forms part of the focus together with the verb).

of the verb, which is conducive to its placement in the presupposition and topic. Non-veridical contexts, like (18), license the non-factual interpretation of the verb, which inhibits its placement in the presupposition and topic. If the context in (18) were changed to veridical, as in (19), the entire semantic and informational structure would be changed; cf.

(19) I have not come all the way to Huntingdon [Topic] // [to celebrate the ruby wedding of two people I have spoken to once for eight seconds since I was three] [Focus] ≈ ‘I have come all the way to Huntingdon, but not for the purpose of celebrating the ruby wedding’

5.3 *All* is in the Focus, the matrix verb is part of the Topic

In this type of sentences, the matrix verb and the rest of the sentence are in the topic, while *all* forms a contrastive focus. The verb is presupposed and does not fall into the scope of negation, whereas *all* is asserted and becomes target for negation, attaining the interpretation ‘some’. Consider the following sentences:

(20) The right rim of the casket had not fallen [ALL] [contrastive Focus] the way to the floor and was still propped partially on its supports [Dan Brown. Angels and Demons (2000)] [‘The rim had fallen part of the way’]

(21) They could not watch [ALL] [contrastive Focus] places [ALWAYS] [contrastive Focus] [Isaac Asimov. The Gods Themselves (1972)] [‘They watched some places some of the time, or all places some of the time, or some places all of the time’]

This type of information structure is fairly frequent. It can be explained by the existence of pragmatic implicatures shared by the speaker and the hearer that allow the speaker to rely on this common background to draw contrast between the natural expectations and the actual situation. Some of these implicatures are considered in the section below.

6 Pragmatic implicatures

While in some cases the likelihood of a particular scope interpretation is determined by syntactic or information structure of an utterance, sometimes these considerations are overridden by pragmatic factors, most frequently by conventional pragmatic implicatures. An interesting case of pragmatic implicatures is provided by time expressions. The following examples demonstrate a certain pragmatic difference which determines different scope interpretations:

(22) *I haven't [slept] all night* [‘The whole night, I haven't slept’]

(23) *I haven't slept [all] day* [‘I slept only part of the day’]

There are different conventional implicatures concerning night and day, and they involve different pragmatic expectations: people usually sleep the greater part of the night, and do not sleep at all during the day. Saying that one did not sleep part of the night would not be particularly informative because people often sleep only the bigger part of the night, but not the whole night. This is proved by sentences like *I slept the whole night today*, stating this as a somewhat unusual occurrence. Thus, *sleeping the whole night* (very good night sleep) and *not sleeping the whole night* (total insomnia) are both noteworthy occurrences.

As for (23), it also describes an unusual situation, but it sets a different pragmatic context. It cannot be interpreted as (22), meaning that the speaker had day insomnia; since during the daytime people are expected to be active, an emphatic statement of their inability to sleep during this time would be pragmatically uninformative, thus violating Gricean maxims. The only way it can be plausibly interpreted is as a disapproval of the interlocutor's conjecture that the speaker has slept all day, with the background knowledge that the speaker has slept at least some time during the day. Therefore, *all* is necessarily focused and emphasized and thus becomes available for negation.

To generalize, in context when *all* is part of a time expression, the interpretation is determined by pragmatic factors. Sleepless nights constitute a substantial part of this context type, with only negated verb readings available. As for the remaining contexts, for negated verb readings, the pragmatic implicature is as follows:

(24) It is unusual when there is no action V at all during the entire time period T, but also unusual if action V takes the entire time period T

Consider phrases like *He had not [thought] of her all evening; Her bed [had] not [been made] all day, They [had] not [spoken] all day* to illustrate this type of implicature and the consequent scope reading.

For negated quantifier readings, the pragmatic implicature is as follows:

(25) It is normal that action V is taking place during some of the time period T

Consider phrases like *The concert couldn't have detained you [all] this time, I don't want to be explaining myself [all] the time, I simply cannot work [all] the time* to illustrate this type of implicature and the consequent scope reading.

7 Conclusion

To conclude, the scope of negation over universal quantifier is determined by a range of factors. The preliminary “sifting” of contexts shows the syntactic function of the constituent containing *all* to be the factor influencing scope interpretation. The next level of analysis demonstrates the role of information structure in selecting the plausible reading. Finally, in a variety of contexts scope disambiguation is triggered by conventional pragmatic implicatures.

Acknowledgments

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