Double intensionality:

The interaction of opacity and modality across clause boundaries

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Abstract

Opaque verbs like *to seek* and *to owe* are intensional with respect to their object argument. In this paper, I will focus on new data in German where two types of intensionality - opacity and modality - interact in a way that is not predicted by traditional semantic theory. The data involves opaque verbs in matrix position and modalized relative clauses that are attached to the intensional object argument in the matrix clause. The discussion will show that the phenomenon is very restricted and seems to appear only in certain contextual surroundings. Focussing on the evidence the data suggests, I will argue towards an analysis of modal subordination in the lines with Roberts (1989) that can capture the unexpected behavior of double intensionality in the sentences in question by analysing the involved relative clause as a non-restrictive.

1. Introduction

This paper is concerned with the semantics of sentences containing multiple sources for intensionality. In particular, I am interested in examples where matrix intensional verbs interact with an embedded modal element, and I will focus on the verb to seek in combination with object modifying relative clauses. The purpose of this paper is not to represent a detailed analysis, but to concentrate on the puzzling data with the aim of comprehending the relevant linguistic features of the sentences that hopefully will help with the formulation of a thorough analysis.

The starting point of this paper is a phenomenon that can be witnessed in the minimal pair in (1) and (2) in German focussing on the unspecific object reading in both sentences. (2) represents the sentence with multiple intensional elements.

(1) Die   Firma   sucht   einen   Ingenieur,   der   fließend   Englisch   spricht.
    the   company   seeks   an   engineer   who   fluently   English   speaks

(2) Die   Firma   sucht   einen   Ingenieur,   der   fließend   Englisch   sprechen
    the   company   seeks   an   engineer   who   fluently   English   speak
    soll.
    should

The two intensional elements in (2) are (i) the opaque verb suchen in the matrix verb position and (ii) the modal verb sollen inside the relative clause. The surprising feature of this minimal pair is that the unspecific object reading brings out the same interpretation in both sentences. This surely is odd since the second sentence contains two intensional elements, the opaque verb and the modal, and the first sentence only one, the opaque verb. In both cases the context of the sentence could be a job advertisement adressed to engineers who are looking for a job and speak English fluently. The specific reading, in which we are not interested here, singles out one particular engineer the company is looking for, maybe because he has gone missing. In a context like this, the sentences in (1) and (2) do vary in meaning.

In the unspecific reading, the relative clause in both sentences defines the search profiles of the company and - as mentioned before - both sentences share the same meaning. The observation that both sentences express the same content leads to the conclusion that in an unspecific reading the modal verb in (2) does not contribute to the meaning of the sentence. However, a detailed discussion of the data shows evidence that the modal is not generally redundant and does have a function in the sentence.

2. More data and paraphrases

When thinking about similar minimal pairs like the one in (1) and (2), we quickly realize that the phenomenon sketched above is restricted to very few examples. This means that you cannot just take a random opaque verb, form an arbitrary object modifying relative clause, put some modal verb inside of it and expect the same behaviour as in the example in (2). So, the minimal pair in (3) basically features the same elements as the minimal pair in (1)-(2). However, the unspecific reading of (3a) is not synonynous with the unspecific reading of (3b). The modal verb in the second example clearly has an impact on the interpretation of the relative clause.

(3) a. Hans sucht einen Lehrling, der   gerade Pause   macht.
         Hans seeks   an   apprentice who   just now break   takes

     b. Hans sucht einen Lehrling, der   gerade Pause   machen   kann.
         Hans seeks   an   apprentice who   just now break   take   can

For now, I will not go into the distribution of the phenomenon in different surroundings. For the sake of simplicity, in this paper, I will be content with playing around with the basic minimal pair, not caring about the interaction of other intensional verbs and modal elements.

2.1. The content of the relative clause

Besides the opaque verb seek, a major factor for the occurence of a phenomenon like the one in (2) is contingent upon the content the relative clause expresses. Consider the following minimal pair:

(4) a. Der Reporter sucht einen Fußballfan, der   ein Bayern Trikot trägt.
         the reporter seeks a   soccer fan who a   Bayern jersey wears

     b. Der Reporter sucht einen Fußballfan, der   ein Bayern Trikot tragen soll.
         the reporter seeks a   soccer fan who a   Bayern jersey wear   should

Focussing on the unspecific reading, the b-example in the minimal pair in (4) does not represent a valid paraphrase for the a-example. This means that (4) behaves differently from our basic minimal pair in (1)-(2), which in an unspecific reading consisted of two synonymous sentences since the modal verb in the relative clause did not contribute to the meaning of the sentence in (2). Contrary to that, in (4b), the modal verb in the relative clause does have a crucial impact on the meaning of the sentence: Whereas in (4a), the random soccer fan can be anyone standing outside the stadium proudly wearing a Bayern jersey, (4b) describes a situation in which the soccer fan is told to wear the jersey.

Following this intuition, there are also examples with modalized relative clauses where the obligation or necessity that is expressed via sollen comes out even stronger. The context of (5b) suggests that the obligation expressed with the modal in this example does not originate from the matrix subject journalist.

(5) a. Der Journalist sucht einen Häftling, der   über zehn Jahre   sitzt.
         the journalist seeks an   inmate   who   more than ten years does time

     b. Der Journalist sucht einen Häftling, der   über zehn Jahre   sitzen   soll.

the   journalist seeks   a   inmate   who more than ten years do time should

In some minimal pairs, the difference in meaning between the sentence with the modal and the sentence without the modal is very subtle. Sometimes, depending on the context and the content of the relative clause, both sentences can be uttered in the same situation, but one sounds more natural than the other one. The minimal pair in (5) however, is not one of the subtle cases. The difference between the a- and the b-sentence is very clear and truth-conditionally valid: In (5a), the jounalist is looking for an inmate who is in jail for over a decade. This may not be the only reading for (5a), but it definitley is a prominent one. In (5b), it is not specified how much time the inmate has already served. We may have a situation in which the journalist finds an inmate who was sentenced to 12 years in prison the week before. Hence, the modalized relative clause in (5b) can express something that lies ahead.

The temporal relation between the event portrayed in the matrix clause and the event of the relative clause emerges strongly in sentences where the content of the relative clause is truly episodical or punctual.

(6)   a.   Die   Reporterin sucht einen Chemiker, der   ein   Experiment durchführt.
            the   reporter   seeks a   chemist   who   an   experiment executes

      b.   Die   Reporterin sucht einen Chemiker, der   ein   Experiment durchführen
            the   reporter   seeks a   chemist   who   an   experiment execute
            soll.
            should

The example in (6b) resembles the original example in (2) with respect to the obligation that is imposed on the unspecific person in object position: It is imposed by the subject of the matrix clause and defines its search profile. In (6b) the reporter outlines the specific job the future chemist has to do; for instance the reporter might be hosting a TV-show about the dangers with household chemicals and she wants a real life chemist to perform an experiment on air. However, this does not have to be the case in (6a), where for different reasons the reporter can be looking for some chemist who is doing an experiment at the moment of the utterance. Although the minimal pair in (6) is similar to the basic minimal pair introduced in the first section, the behavior is different since the sentences in (6) are not synonymous and the modal verb in (6b) does contribute to the meaning concerning the explicitly expressed obligation and the deduced orientation to the future.

Another example that on the surface looks very similar to the original minimal pair is the one in (7). Here, too, the phenomenon presented in this paper is not available. Both sentences have their individual meaning.

(7) a. Die   Firma   sucht eine Ingenieurin,   die   die Geschlechterquote erfüllt.
         the   company seeks an   engineer (fem.)who the gender quota   fulfills
     b. Die   Firma   sucht eine Ingenieurin,   die   die Geschlechterquote erfüllen
         the   company seeks an   engineer (fem.)who the gender quota   fulfill
         soll.
         should

In (7b), the female unspecific engineer does not have to fulfill any obligations. She just has to be female and be hired by the company, so that the company meets a certain gender quota. The relative clause with the modal does not specify what kind of engineer is being sought. Rather it seems to refer to the act of hiring a female engineer and explains the reason why the company plans to do so. The meaning of (7a) is different from (7b). In the latter, the company is looking for an engineer who is already part of a team with a gender quota. It does not have to be the company's own team. Due to the definite article in the relative clause, (7a) might sound a little bit odd out of the blue. However, this should not weaken the argument.

In this section, I have presented more data to outline the phenomenon of the seemingly meaningless embedded modal verb in the context of another source of intensionality. We can conclude from this short discussion that the behaviour of the sentence in (2) is very restricted. One reason for the strange behaviour of the modal lies in the non-eventative content of the relative clauses in the original minimal pair and the lack of temporal progression that was present in other examples of this section. Indeed, the feature of speaking English fluently can be paraphrased with having the ability of speaking English fluently, which means that we are dealing with a dispositional generic predicate in the examples in (1) and (2). I will conclude this section with the hypothesis that in the unspecific reading, the non-eventative content of the relative clause is one major aspect that triggers the phenomenon.

2.2. Restrictive or non-restrictive?

One of the main questions about the sentence in (2) is concerned with the status of the relative clause. Several tests suggests that the relative clause in an unspecific reading in (1) can only be restrictive whereas the relative clause in (2) is appositive in the favored reading. There is for instance a test where a modal particle is integrated into the relative clause. This should

only be possible in a non-restrictive relative clause. For the sentence in (1), here repeated in (8) with the modal particle übrigens, the test shows that the unspecific reading immediately is out. You only get a specifc reading for the engineer, which means that the specific reading is compatible with an appositive relative clause, but the unspecific reading is not.

(8)   Die Firma   sucht einen Ingenieur, der übrigens fließend Englisch
        the   company seeks an   engineer   who MP   fluently English

spricht.
speaks

                      - specific reading: ok
                      - unspecific reading: *

When doing the same with example (2), here repeated in (9), we get different results in the readings: Both the specific and the unspecific reading are available. Consequently, the appositive relative clause should be available for the specific and the unspecific reading.

(9)   Die   Firma   sucht einen Ingenieur, der übrigens fließend Englisch
        the   company   seeks an   engineer   who MP   fluently English

sprechen soll.
speak   should

                  - specific reading: ok
                  - unspecific reading: ok

The second test to determine whether the relative clause is restrictive or not is a paraphrasing test that emanates from the Main Clause Hypothesis stated in Emonds (1979), capturing the observation that structurally, appositive relative clauses are just like independent sentences. The test says that when a sentence with a relative clause can be transformed into a two-sentenced discourse without any change in meaning, then the relative clause has an appositive status. If the relative clause is restrictive, the transformation output would be ungrammatical. Again, for the sentence in (1), the paraphrase in (10) is only possible in a specific reading whereas the paraphrase of the sentence with the modal in (2) allows both readings (11).

(10) Die Firma   sucht einen Ingenieur. Er spricht fließend Englisch.
      the   company seeks an   engineer   he speaks fluently English

       - specific reading: ok

       - unspecific reading: *

(11) Die   Firma   sucht   einen   Ingenieur. Er   soll   fließend   Englisch
     the   company seeks   an   engineer   he   should fluently English
     sprechen.
     speak

       - specific reading: ok

       - unspecific reading: ok

Both tests show the same result and suggest that the relative clause in (2) has an appositive interpretation that is relevant for the reading in question. Additionally, they say that the relative clause in (1) in an unspecific reading can only be restrictive. This means that both sentences in an unspecific reading have a different behavior with respect to their relative clauses, although they share the same meaning.

3. Working towards an analysis

In this section, I will propose the main idea of an analysis for the sentence in (2) and the modal inside of it. The motivation for this analysis comes basically from the observations made in the section 2.2, saying that the relative clause in (2) has an appositive status in the unspecific reading.

3.1. Modal subordination as the solution?

Looking at the acceptable paraphrase of (2) in (11), we can see a strong resemblence to a phenomenon called modal subordination, famously described in Roberts (1989). Other work on modal subordination with different approaches has been done by Geurts (1995) and Frank (1997) amongst others. In this paper, I will only focus on Roberts' very intuitive account since we are not concerned with technical issues in this paper. Consider one of her examples in (12) (c.f. Roberts 1989:697).

(12) A thief might break into the house. He would take the silver.

The basic question of discourses like the one in (12) was how to interpret and analyse the pronoun he in the second sentence as it falls outside the scope of its antecedent a thief but is

easily to interpret as referring to the thief that might break in. The subject of the discourse is unspecific which indicates that the pronoun he is an E-type pronoun: it does not refer to one specific thief but to different thieves in their corresponding burglary-world. Roberts analyses the first sentence as a restriction of the relevant worlds that are available for the second sentence in so far that the pronoun he can only refer to the one 'specific' unspecific thief in a possible world in which the thief breaks in. She analyses the discourse with the strategy of accomodation in terms of Lewis (1979). In her words, the paraphrase of (12) would be the following (Roberts 1989:700):

> "Given what we already know in common about the actual world, it is possible that a thief will break into the house. <u>In all such worlds where a thief breaks into the house,</u> he takes the silver."

The interpretation of the pronoun he comes from the implicit antecedent that is available via accomodation of the first sentence (underlined clause in the quotation). The accomodation is triggered by the two modal elements in each of the sentences. In (12), the modal element of the first sentence is the verb might, which expresses a possibility, and the modal element of the second sentence is the verb would, which expresses a necessity. The term modal subordination comes from the strategy that – though the modal forces of both elements are independent from each other – the second modal is semantically subordinated to the first one. The accomodated proposition of the first sentence restricts the set of worlds that are relevant for the interpretation of the second sentence and the E-type pronoun is no longer unbound[1].

When comparing the discourse in (11) with the one in (12), we can easily see the parallels: (i) the discourse contains two main sentences; (ii) in both sentences, there is an intensional element; (iii) the pronoun he in the second sentence is an E-type pronoun. Hence, we should be able to analyse (11) like (12) with the strategy of modal subordination. When acting on the assumption that (11) represents a valid paraphrase of (2), then it seems likely that modal subordination can also be adapted to the example in (2).

3.2. Attitude verbs and modal subordination

As one can see, the first intensional element of the example in (11) is different from the one in (12). In (12), the intensional element is a modal verb, whereas in (11), it is an opaque verb.

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[1] Roberts (1989) represents her analysis with a DRT-account. I am not going to introduce DRT nor use it in my argumentation since it is not relevant for the purpose of this paper.

However, this does not cause a problem for the adaption of the analysis because opaque verbs are analysed as attitude verbs, which also appear in discourses with modal subordination. Consider the example in (13), taken from Roberts (1996:217):

(13) John wants to catch a fish. He plans to eat it for supper.

In (13), the pronoun it in the second sentence refers to the unspecific fish John caught in different successful fishing-worlds. The verb want is a prototypical example for an attitude verb. Opaque verbs on the other hand are not that prototypical, still, they are traditionally analysed as attitude verbs. For the verb seek it is argued that it is lexically complex and consists of an attitude and a proposition. This means, the semantics of the verb seek can be translated with trying (to make it true) to find to emphasize the propositional attitude the opaque verb expresses. A suitable paraphrase for the matrix clause in (1) or (2) is presented down below.

(14) The company is looking for an engineer.
    ≈ The company is trying (to make it true) to find an engineer.

Working with a possible world semantics, we can conclude from (14) that in all possible worlds that are compatible with the company's wishes they find an engineer. Due to the unspecificity of the object, this engineer can vary from world to world. The discourse in (11) can be paraphrased as follows.

(15) Die   Firma   versucht einen Ingenieur zu finden. Er   soll   fließend Englisch
      the   company   tries   an   engineer to find   he   should   fluently English
      sprechen.
      speak

In the next section, we are going to adapt the analysis of modal subordination for the discourse in (15) in order to explain the original sentence in (2).

3.3. Explaining intensional appositive relative clauses with modal subordination

The analysis of the original sentence in this paper will not be much different from an ordinary modal subordination analysis since we have layed the groundwork with the paraphrase of (2)

in (15) that already gives us everything we need to trigger modal subordination in terms of Roberts (1989). As already stated, I will not go into the details, but I will only sketch the direction towards a semantic analysis of the phenomenon. Focussing on the discourse in (15), the first sentence restricts the worlds that are relevant for the interpretation of the second sentence. The first sentence will be accomodated into the second sentence to license the E-type pronoun er. The fully formulated paraphrase from (15) is in (16).

(16) The company tries to find an engineer. In all such worlds in which the company finds an engineer, the engineer speaks English fluently.

Usually, the modal in the relative clause adds some modal flavor to the sentence that cannot be ignored in an analysis of modal subordination. In our case, we have stated in the beginning that the modal flavor of the verb soll somehow does not contribute to the meaning. In the analysis of modal subordination, the accomodation of the proposition *the company finds an engineer* to the second clause, serves not only as a scope extender for the pronoun's antecedent but it also provides the set of worlds that functions as the context set for the interpretation of the relative clause. Since the necessity modal soll translates to a universal quantifier, it ranges over all the worlds in which the proposition the company finds an engineer holds. That is why the modal verb in the second sentence does not have to restrict the set of possible worlds any further.

4. Conclusion

This paper argues for a treatment of the sentence with the crucial reading in (2) as an instance of modal subordination. This is motivated by the structural behaviour of the relative clause which led to a categorisation of it as being a non-restrictive relative clause. The synonymy of example (2) to a two-sentenced discourse displays the key to a straighforward analysis in terms of Roberts' account of modal subordination.

However, we have to admit that there are legitimate reasons to deny the appositive status of the relative clause, which eventually would conflict with an analysis of modal subordination. In section 2.2., we have discussed some tests to verify the appositive status of the relative clause. But there is also a significant test which yields a different result for the relative clause in question: The negation test would predict that by negating the matrix clause, the content of the relative clause as an appositive one is uneffected by the negation since appositive relative clauses usually appear outside the scope of sentence negation. Note the difference in meaning

between (17b) and (18b). (17) is an example for an appositive relative clause. The relative clause in (18) is restrictive.

(17) a. Hans is in love with Lina, who still lives with her mother.

b. It is not the case that Hans is in love with Lina, who still lives with her mother.

(18) a. Hans is in love with a girl that still lives with her mother.

b. It is not the case that Hans is in love with a girl that still lives with her mother.

Applying the test to our original examples in (1) and (2), we get the negated sentences in (19) and (20), which both behave like (18b) with respect to the relative clause. In both sentences, the negation takes scope over the relative clause. This would suggest not only that in both sentences the relative clause has a restrictive meaning but also that the non-restrictive reading is not available.

(19) Es ist nicht der Fall, dass die Firma einen Ingenieur sucht,
It is not the case that the company an engineer seeks

der fließend Englisch spricht.
who fluently English speaks

(20) Es ist nicht der Fall, dass die Firma einen Ingenieur sucht,
It is not the case that the company an engineer seeks

der fließend Englisch sprechen soll.
who fluently English speak should

The crucial test results above suggest that the data discussion in this paper is not sufficient to determine whether the relative clause with the modal verb in (2) ist restrictive or appositive. We have to conclude that the status of the relative clause is not yet clear to us. Although the paraphrasing tests in section 2.2. provide evidence that the sentence with the modal has a different behavior from the sentence without the modal, this instance might not be enough to garantee for a suitable analysis with modal subordination. Hence, further work will be necessary.

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